SENTRY SOFTWARE

# Dell Compellent Enterprise Manager ETL for BMC Capacity Optimization

Version 3.5

BCO CONNECTOR Storage Monitoring for BMC CAPACITY Optimization

DELL

## User Documentation

December 2013

BMC SOFTWARE VALIDATED MARKETZONE

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# Introduction

# Release Notes v3.5

**This user documentation was written for BMC Capacity Optimization v9.5.00. The procedures described may therefore slightly differ if you're using BMC Capacity Optimization v9.0.03.**

## What's New

- Dell Compellent Enterprise Manager ETL for BMC Capacity Optimization now supports BMC Capacity Optimization v.9.5.
- Host mapping information is now available for the Dell Compellent platforms through the STOHOST dataset. The information can be visualized in the Storage Capacity view and from the Workspace, under the Volume entity.

## Changes and Improvements

### STOGLB Dataset Performance Metrics

- The following metrics of the STOGLB dataset have been renamed in BMC Capacity Optimization v9.5:

| BCO 9.5 - STOGLB Metrics | BCO 9.0 - STOGLB Metrics |
|---|---|
| ST_AVAILABLE_CAPACITY | ST_FREE |
| ST_CAPACITY | ST_CONFIG_SUM |
| ST_CONFIG_SIZE | ST_CONFIG_SUM_RAW |
| ST_ACC_USED | ST_CONFIG_SIZE |
| ST_CONSUMED_CAPACITY | ST_ACC_USED<br>ST_USED |
| ST_CONSUMED_CAPACITY_PCT | ST_USED_PCT |
| ST_OVERSUBSCRIBED_CAPACITY | ST_POOL_OVERSUBSCRIBED_TOTAL |
| ST_POOL_RAID_LEVEL | ST_POOL_PROTECTION_LEVEL |
| ST_POOL_SUBSCRIBED_CAPACITY | ST_THINPOOL_SUBSCRIBED_TOTAL |
| ST_SIZE | ST_RAW |
| ST_SYSTEM_MODEL | ST_MODEL |
| ST_SYSTEM_PORT_NUM | ST_PORT_COUNT |
| ST_SYSTEM_SUBSCRIBED_CAPACITY | ST_ACCESSIBLE |
| ST_SYSTEM_VENDOR | ST_VENDOR |
| ST_VOLUME_CONSUMED_CAPACITY | ST_VOLUME_USED |

**Please note that the values collected under the former metric names will be automatically transferred under the new metric name.**

# Fixed Issues

- The error BCO_SCH_ERR015 would be displayed when an internal connection management problem occurred. The ETL now handles the connection to the data warehouse properly.
- The metric ST_OVERSUBSCRIBED_CAPACITY, which was named ST_POOL_OVERSUBSCRIBED_TOTAL in BCO v9.0.03, is now loaded properly.

# Support Information

You can obtain technical support by using the Support page on the BMC Software Web site or by contacting Customer Support by telephone or email.

## Support Web Site

You can obtain technical support from BMC Software 24 hours a day, 7 days a week at http://www.bmc.com/support/. From this Web site, you can:

- Read overviews about support services and programs that BMC Software offers
- Find the most current information about BMC Software products
- Search a database for problems similar to yours and possible solutions
- Order or download product documentation
- Report a problem or ask a question
- Subscribe to receive email notices when new product versions are released
- Find worldwide BMC Software support center locations and contact information, including email addresses, fax and telephone numbers

## Support by Telephone or Email

In the United States and Canada, if you need technical support and do not have access to the Web, call 800 537 1813. Outside the United States and Canada, please contact your local support center for assistance. To find telephone and email contact information for the BMC Software support center that services your location, refer to the Contact Customer Support section of the Support page on the BMC Software Web site at http://www.bmc.com/support/.

## Additional Resources

You can also access product documents and search the Knowledge Base for help with an issue at http://www.sentrysoftware.com.

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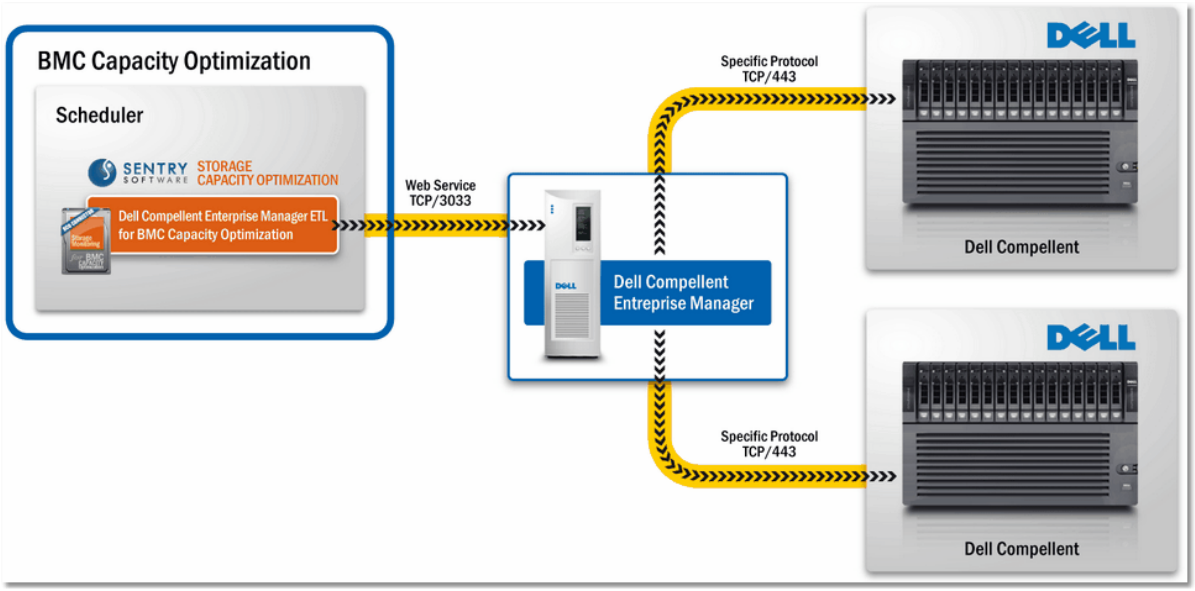
***713 918 8800***
***Customer Support: 800 537 1813 (United States and Canada) or contact your local support center***

# Overview

**Dell Compellent Enterprise Manager ETL for BMC Capacity Optimization** is a connector specifically designed for BMC Capacity Optimization and can be defined as an ETL Service, named **Sentry Software Integration for BCO - Dell Compellent Enterprise Manager Extractor Service**, that continuously polls and collects data from Dell Compellent Enterprise Manager. Once an ETL Service is started, it runs continuously on BMC Capacity Optimization. Once properly configured, the Dell Compellent Enterprise Manager Extractor Service task collects all the metrics required for performing critical capacity optimization tasks, such as: analysis, trending, simulation and analytic modeling.




*Dell Compellent Enterprise Manager ETL for BMC Capacity Optimization Architecture Diagram*

# Getting Started

# Supported Platforms and Versions

## Supported Dell Compellent Storage Centers

Dell Compellent Enterprise Manager ETL for BMC Capacity Optimization supports any Dell Compellent Storage Centers compatible with Dell Compellent Enterprise Manager 6.3.

## Supported versions of BMC Capacity Optimization

Dell Compellent Enterprise Manager ETL for BMC Capacity Optimization v3.5 natively requires BMC Capacity Optimization v9.5 and higher. A compatibility package is however available for the users of BMC Capacity Optimization v9.0.03 (Refer to **Getting the Installation Package** section).

# Getting the Installation Package

The installation package for Dell Compellent Enterprise Manager ETL for BMC Capacity Optimization can be downloaded from Sentry Software Web site and consists of the following archives:

- Dell-Compellent-Enterprise-Manager-ETL-for-BCO-3.5.00.zip (archive for BCO 9.5)
- Dell-Compellent-Enterprise-Manager-ETL-for-BCO-3.5.00-Compatibility903.zip (archive for BCO 9.0.03)

The file can be saved on any server accessible via the BCO Console.

Before you can install Dell Compellent Enterprise Manager ETL for BMC Capacity Optimization you must have previously installed and configured BMC Capacity Optimization. Please refer to the documentation provided by BMC for further information about the BMC Capacity Optimization installation and configuration procedures.

# Dell Compellent Enterprise Manager

Dell Compellent Enterprise Manager allows you to monitor, manage, and analyze Storage Centers from a centralized management console. It consists of the following components:

- **Data Collector**: Data Collector is a service that gathers reporting data and alerts from all Storage Centers. There are two types of Data Collectors: Primary and Remote. All installations must include one primary Data Collector. Each Data Collector service (primary or remote) is managed using a Data Collector Manager.
- **Database**: Data Collector stores data in a database or flat file. The database can run on the same or a different platform from Data Collector.
- **Enterprise Manager Clients**: An Enterprise Manager Client connects to the Data Collector Service to provide a centralized management console for one or more Storage Centers. Additional clients can be connected to the same Data Collector Service to provide management from more than one location.
- **Server Agents**: By installing a Server Agent for Microsoft Windows on each Windows server using a Storage Center, Data Collector can gather local volume information from a Windows server. Using this information, Enterprise Manager can free volume storage space from expired Replays that would otherwise remain locked by Windows. Each Server Agent is managed by a Server Agent Manager.

This guide describes how to install and configure Enterprise Manager components. For more information, please refer to the Dell Compellent Enterprise Manager documentation.

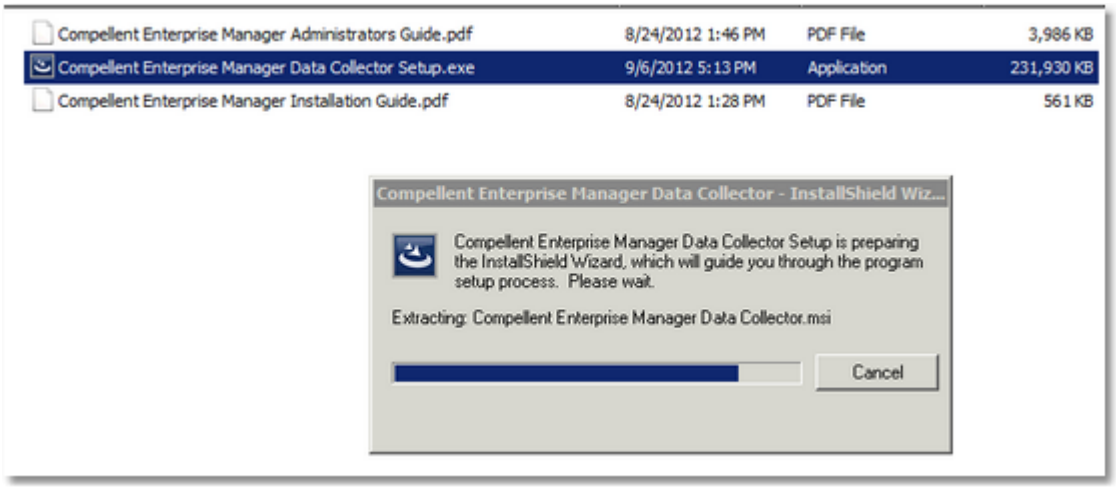
## Requirements

Dell Compellent Enterprise Manager requires Java Runtime Environment (JRE) 1.6 or higher (1.6 Update 30 or higher recommended). On 64-bit systems both the 32-bit and the 64-bit JRE are required.

# Installing Enterprise Manager Data Collector

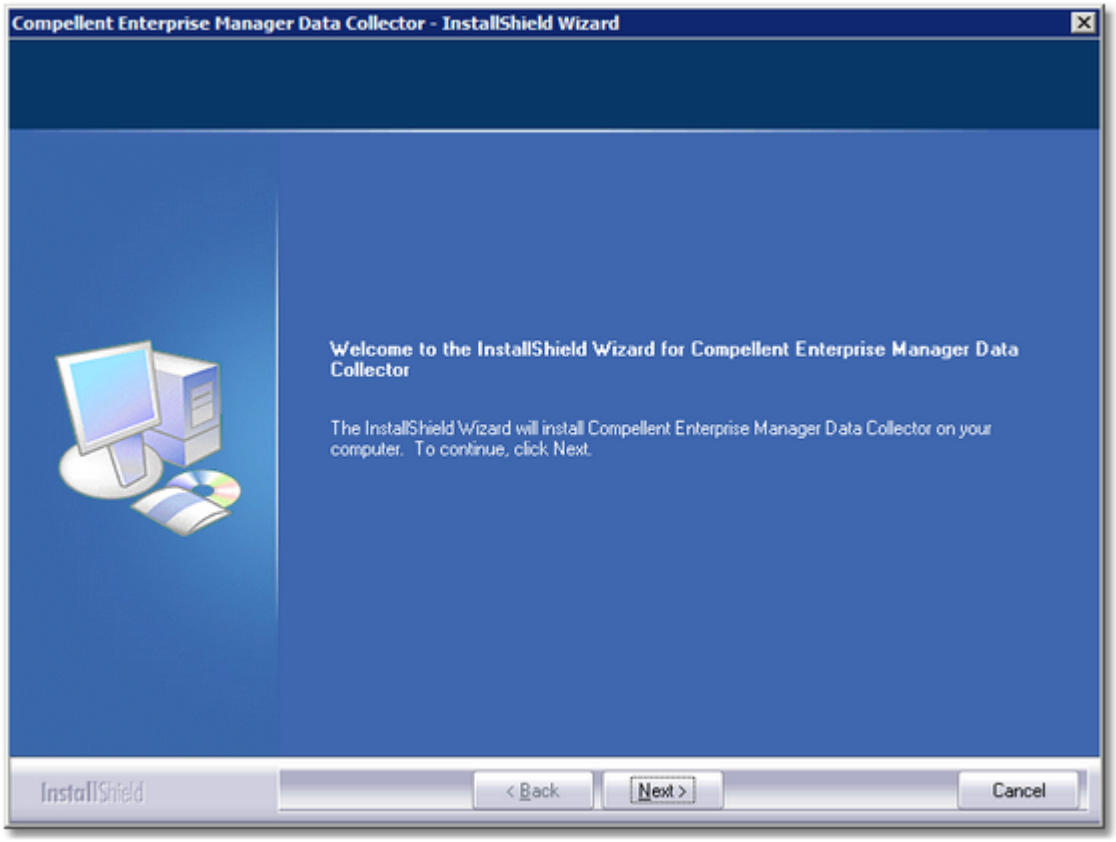
To install Enterprise Manager Data Collector:

1. Download the Enterprise Manager Data Collector software:
   - Go to the Dell Compellent Support Home Page.
   - Log on to the customer or partner portal.
   - Click **Knowledge Center**, then download the Enterprise Manager Data Collector Setup file
2. Run **Compellent Enterprise Manager Data Collector Setup.exe**.


Compellent Enterprise Manager Administrators Guide.pdf 8/24/2012 1:46 PM PDF File 3,986 KB
Compellent Enterprise Manager Data Collector Setup.exe 9/6/2012 5:13 PM Application 231,930 KB
Compellent Enterprise Manager Installation Guide.pdf 8/24/2012 1:28 PM PDF File 561 KB
Compellent Enterprise Manager Data Collector - InstallShield Wiz...
Compellent Enterprise Manager Data Collector Setup is preparing the InstallShield Wizard, which will guide you through the program setup process. Please wait.
Extracting: Compellent Enterprise Manager Data Collector.msi
Cancel

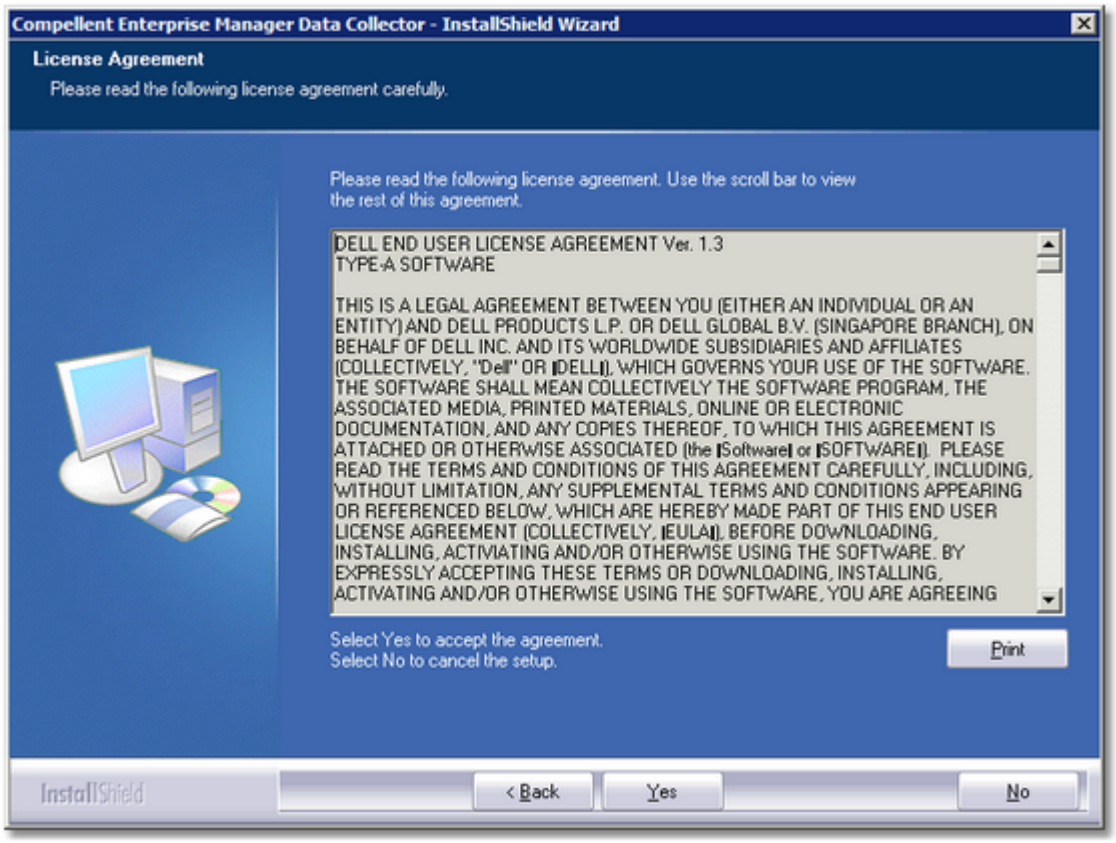
*Installing Enterprise Manager Data Collector - Setup File*

3. Click **Next**.


Compellent Enterprise Manager Data Collector - InstallShield Wizard
Welcome to the InstallShield Wizard for Compellent Enterprise Manager Data Collector
The InstallShield Wizard will install Compellent Enterprise Manager Data Collector on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

*Installing Enterprise Manager Data Collector - Welcome*

4. Click **Yes** to accept the license agreement and launch the installation.


Compellent Enterprise Manager Data Collector - InstallShield Wizard
License Agreement
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Please read the following license agreement. Use the scroll bar to view the rest of this agreement.
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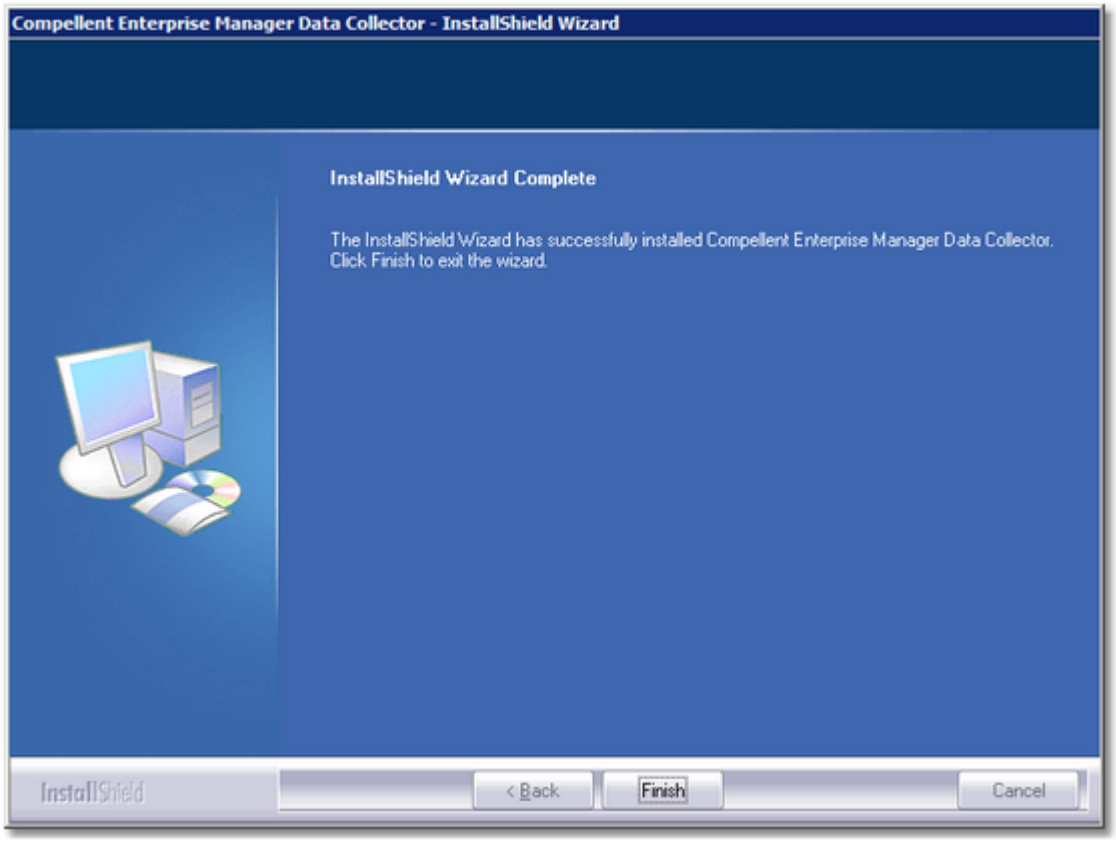
Select Yes to accept the agreement.
Select No to cancel the setup.
Print
InstallShield
< Back
Yes
No

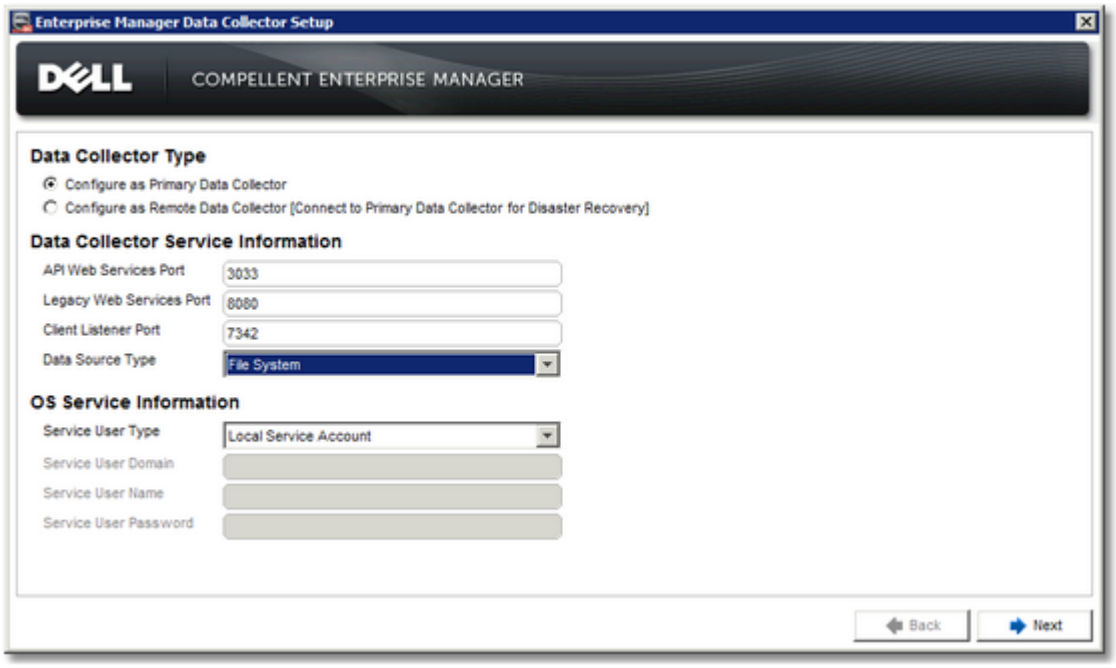
*Installing Enterprise Manager Data Collector - License Agreement*

5. Once the installation is complete, click **Finish**.


Compellent Enterprise Manager Data Collector - InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed Compellent Enterprise Manager Data Collector. Click Finish to exit the wizard.
InstallShield
< Back
Finish
Cancel

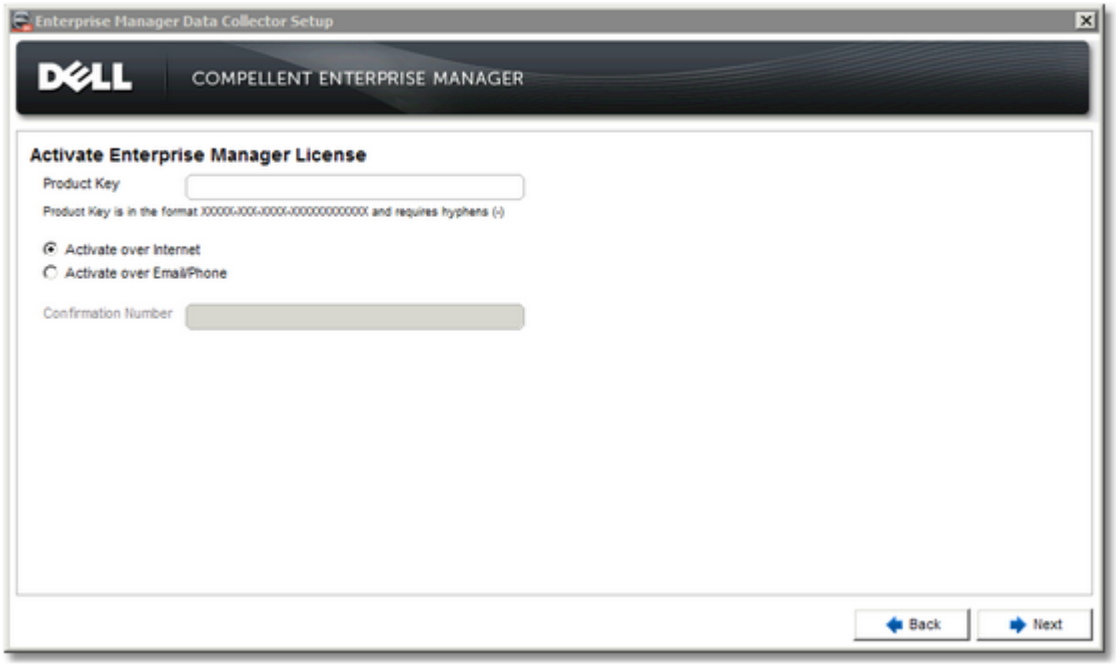
*Installing Enterprise Manager Data Collector - Installation Complete*

6. Configure Enterprise Manager Data Collector:
   - Select **Configure as Primary Data Collector**
   - Set the Data Collector Service and OS Service Information
   - Click **Next**.




*Installing Enterprise Manager Data Collector - Configuration*

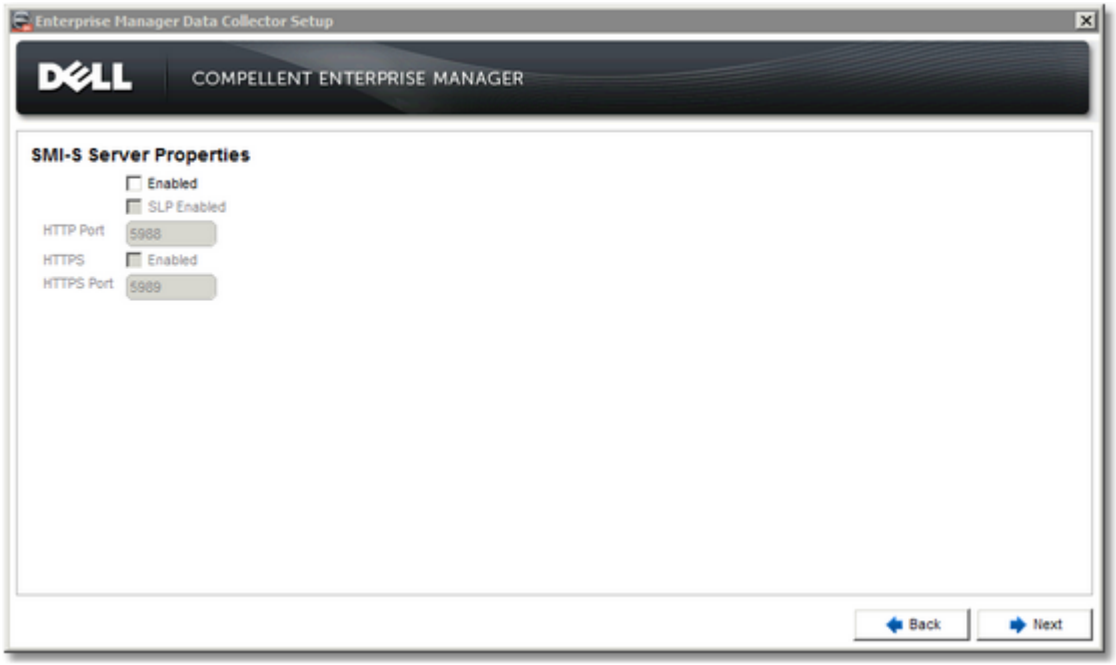
7. Enter the **Product Key**, choose whether you want to activate your license over Internet or over Email/Phone, and click **Next**.




*Installing Enterprise Manager Data Collector - License Activation*

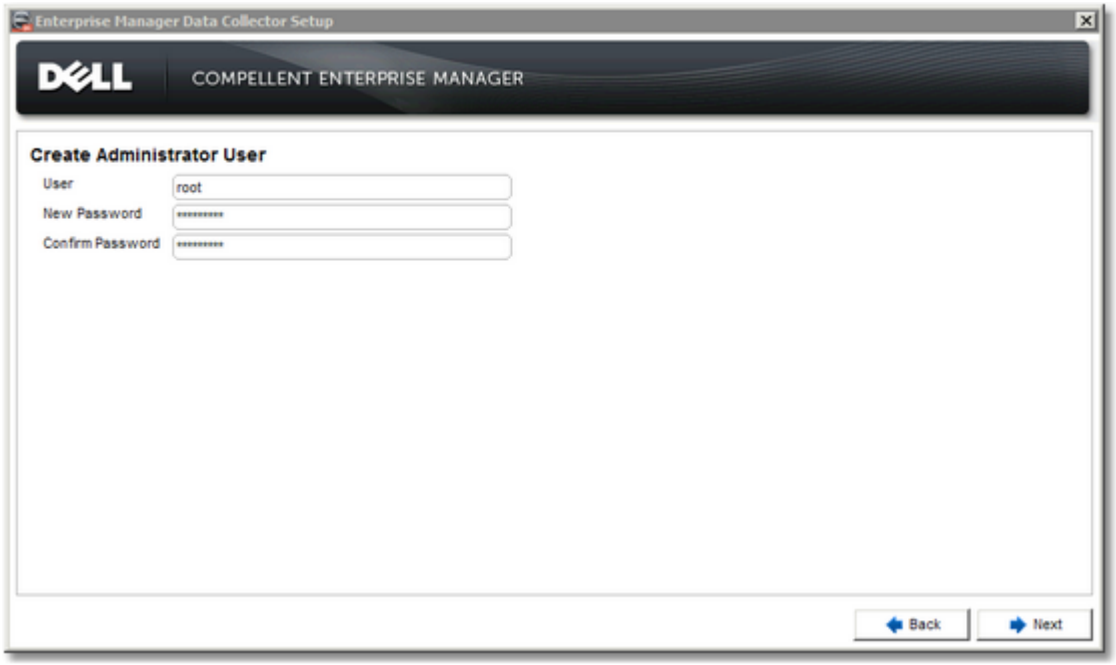
*Data collector can be used for 30 days without activation.*

8. Since Dell Compellent Enterprise Manager ETL for BMC Capacity Optimization leverages the Dell Compellent API, there's no need to enable the SMI-S Server. Leave the fields blank and click **Next**.




*Installing Enterprise Manager Data Collector - SMI-S Server Properties*

9. Create the **Administrator User** that will be used to log on to the Enterprise Manager and click **Next**.




*Installing Enterprise Manager Data Collector - Administrator User*

10. The Enterprise Manager Data Collector setup is now complete. Click the URL to go to the Data Collector Website. Click **Finish**.

*Installing Enterprise Manager Data Collector - Setup Complete*

# Installing Enterprise Manager Client

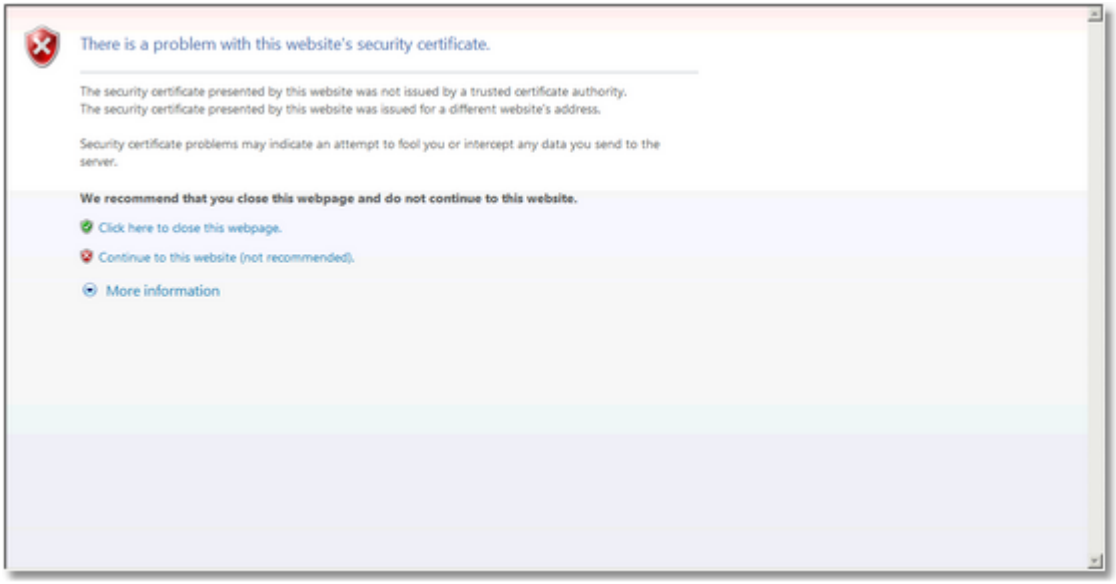
The Enterprise Manager Client is a Windows application that connects to the Data Collector, allowing you to view and manage multiple Storage Centers. You can install the client on the Data Collector server or a computer that has network connectivity to the Data Collector server.

To install Enterprise Manager Client:

1. Go to **Data Collector Website**. The default location for the website is: https://<emdc_hostname_ip>:<emdc_web_server_port> where:
   - <emdc_hostname_ip> is the host name or IP address of the server that hosts the Data Collector.
   - <emdc_web_server_port> is the Data Collector web service port; the default port is 3033.

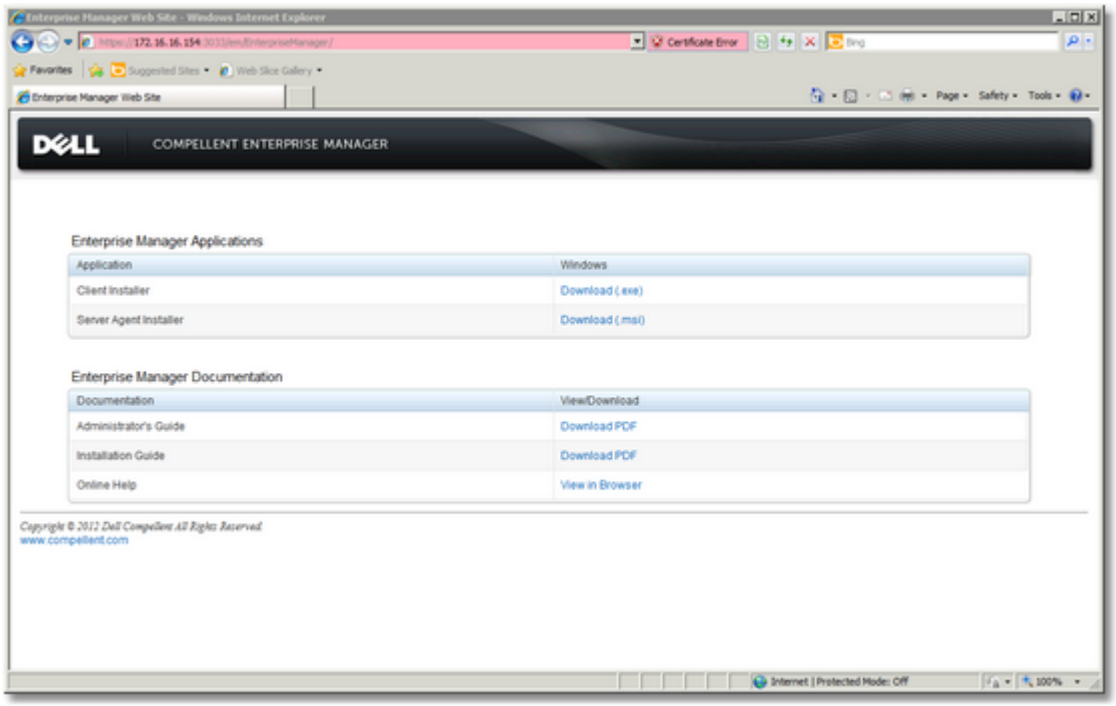
*The URL of the Data Collector Website is displayed in the Enterprise Manager Data Collector wizard when the installation is complete.*

- Click **Continue to this website**.


There is a problem with this website's security certificate.
The security certificate presented by this website was not issued by a trusted certificate authority.
The security certificate presented by this website was issued for a different website's address.
Security certificate problems may indicate an attempt to fool you or intercept any data you send to the server.
We recommend that you close this webpage and do not continue to this website.
Click here to close this webpage.
Continue to this website (not recommended).
More information

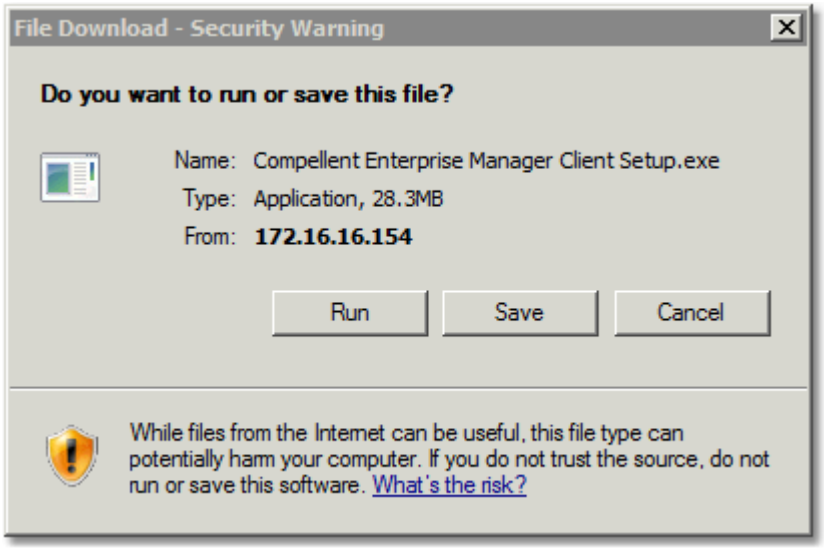
*Installing the Enterprise Manager Client - Security Certificate*

2. Download the **Client Installer**



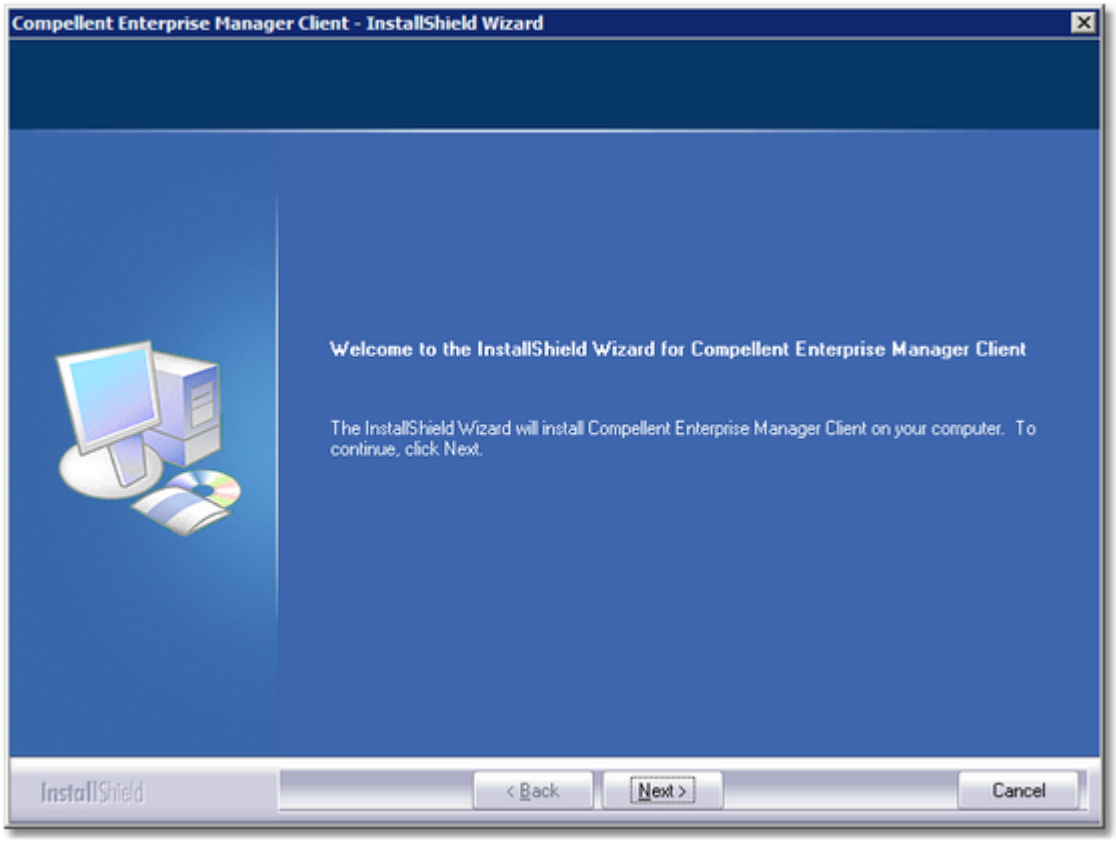

*Installing the Enterprise Manager Client - Download*

3. When the download is complete, double-click the downloaded file.
4. A Security Warning dialog box appears. Click **Run** to start the installation.


File Download - Security Warning
Do you want to run or save this file?
Name: Compellent Enterprise Manager Client Setup.exe
Type: Application, 28.3MB
From: 172.16.16.154
Run
Save
Cancel
While files from the Internet can be useful, this file type can potentially harm your computer. If you do not trust the source, do not run or save this software. What's the risk?

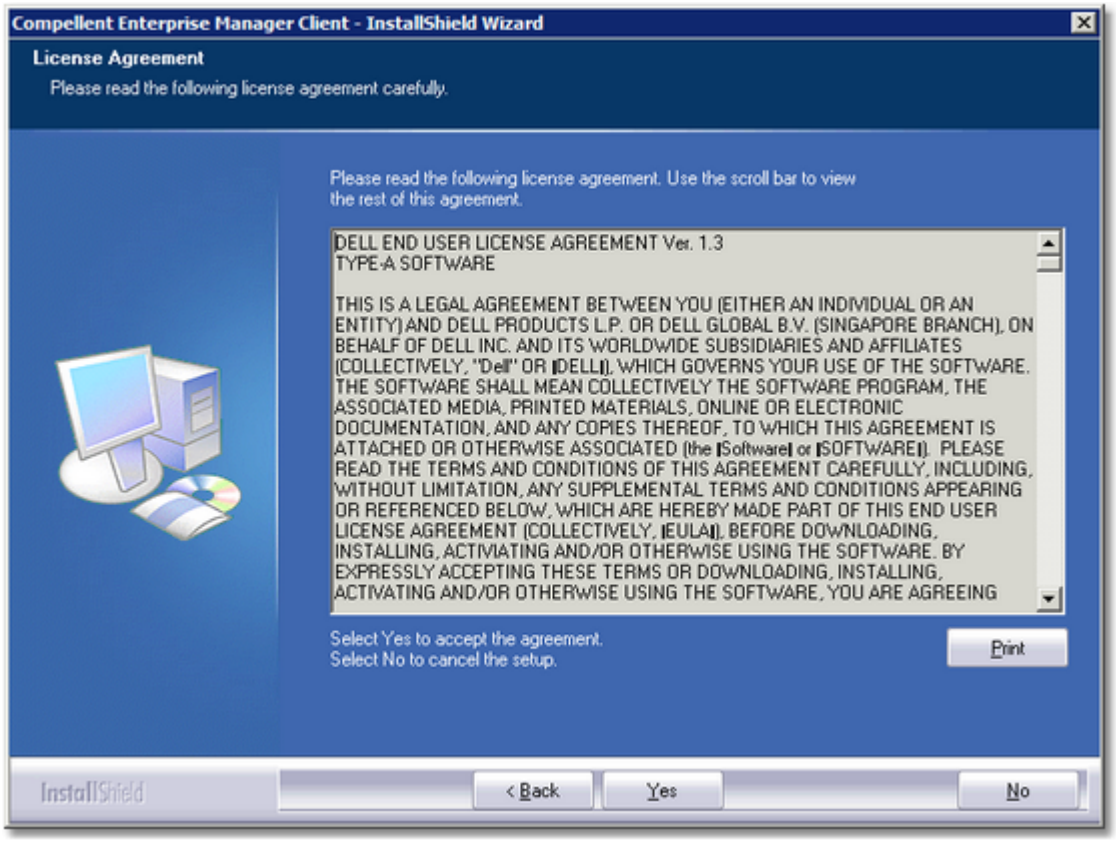
*Installing the Enterprise Manager Client - Security Warning*

5. Click **Next**.


Compellent Enterprise Manager Client - InstallShield Wizard
Welcome to the InstallShield Wizard for Compellent Enterprise Manager Client
The InstallShield Wizard will install Compellent Enterprise Manager Client on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

*Installing the Enterprise Manager Client - Welcome*

6. Click **Yes** to accept the license agreement and start the installation.


Compellent Enterprise Manager Client - InstallShield Wizard
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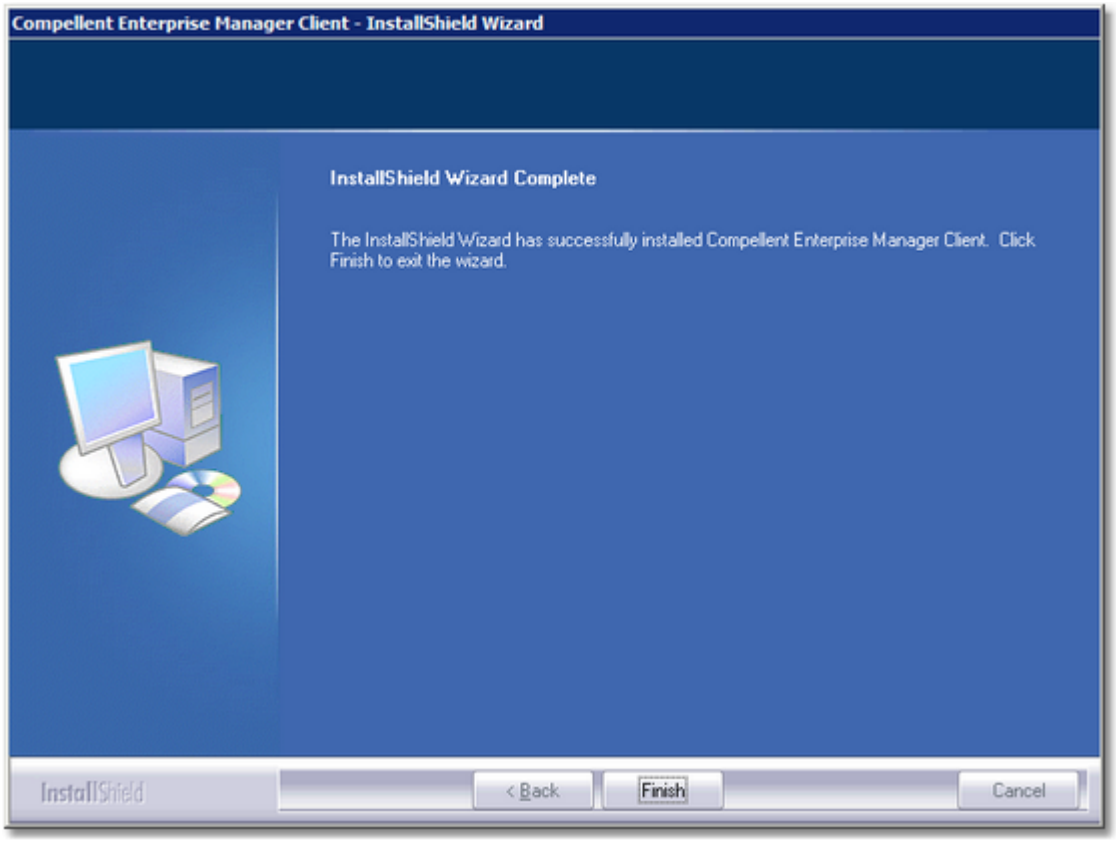
Select Yes to accept the agreement.
Select No to cancel the setup.
Print
InstallShield
< Back
Yes
No

*Installing the Enterprise Manager Client - License Agreement*

7. Click **Finish**.


Compellent Enterprise Manager Client - InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed Compellent Enterprise Manager Client. Click Finish to exit the wizard.
InstallShield
< Back
Finish
Cancel

*Installing the Enterprise Manager Client - Installation Complete*

The Enterprise Manager icon appears on the desktop.

# Installing Enterprise Manager Server Agent

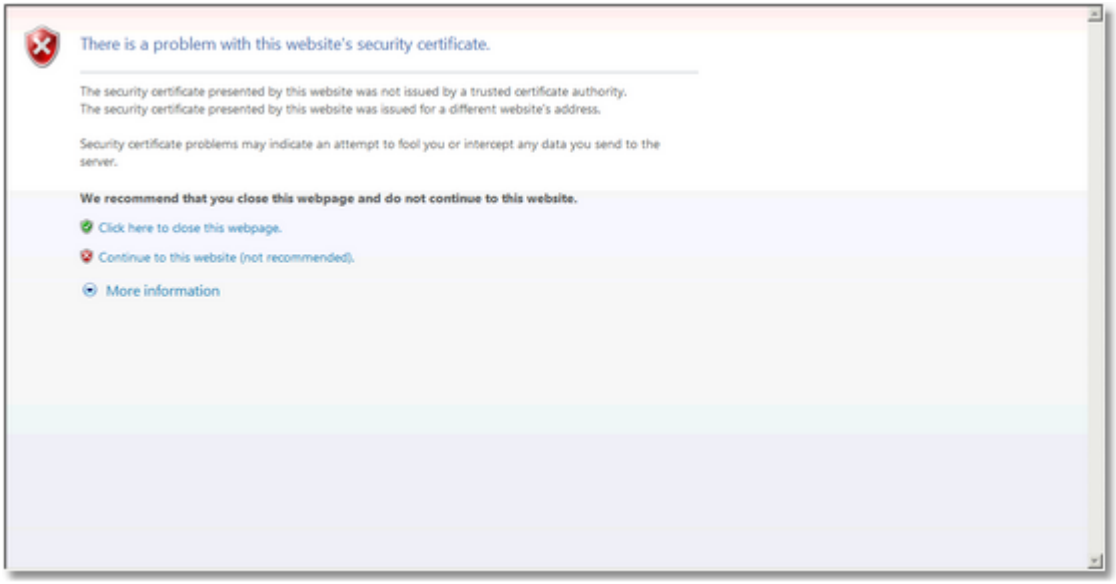
The Enterprise Manager Server Agent is a service for Windows that allows you to see server information, recover unused storage space from Windows NTFS, and monitor and control Dell Compellent NAS and zNAS servers.

To install Enterprise Manager Server Agent:

1. Go to **Data Collector Website**. The default location for the website is: https://<emdc_hostname_ip>:<emdc_web_server_port> where:
   - <emdc_hostname_ip> is the host name or IP address of the server that hosts the Data Collector.
   - <emdc_web_server_port> is the Data Collector web service port; the default is 3033.

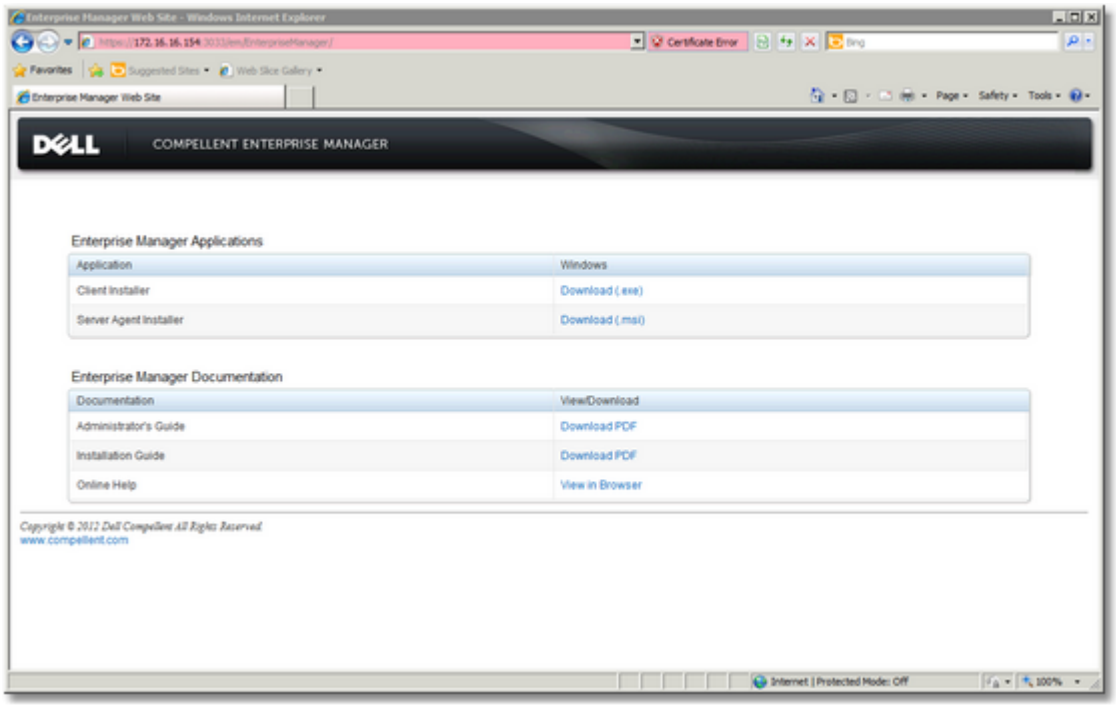
*The URL of the Data Collector Website is displayed in the Enterprise Manager Data Collector wizard when the installation is complete.*

- Click **Continue to this website**.


There is a problem with this website's security certificate.
The security certificate presented by this website was not issued by a trusted certificate authority.
The security certificate presented by this website was issued for a different website's address.
Security certificate problems may indicate an attempt to fool you or intercept any data you send to the server.
We recommend that you close this webpage and do not continue to this website.
Click here to close this webpage.
Continue to this website (not recommended).
More information

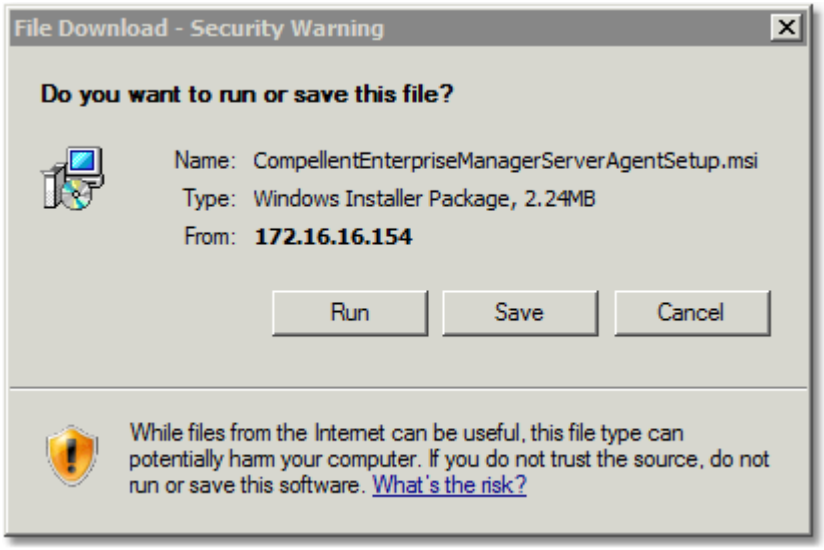
*Installing the Server Agent - Security Certificate*

2. Download the **Server Agent Installer**.



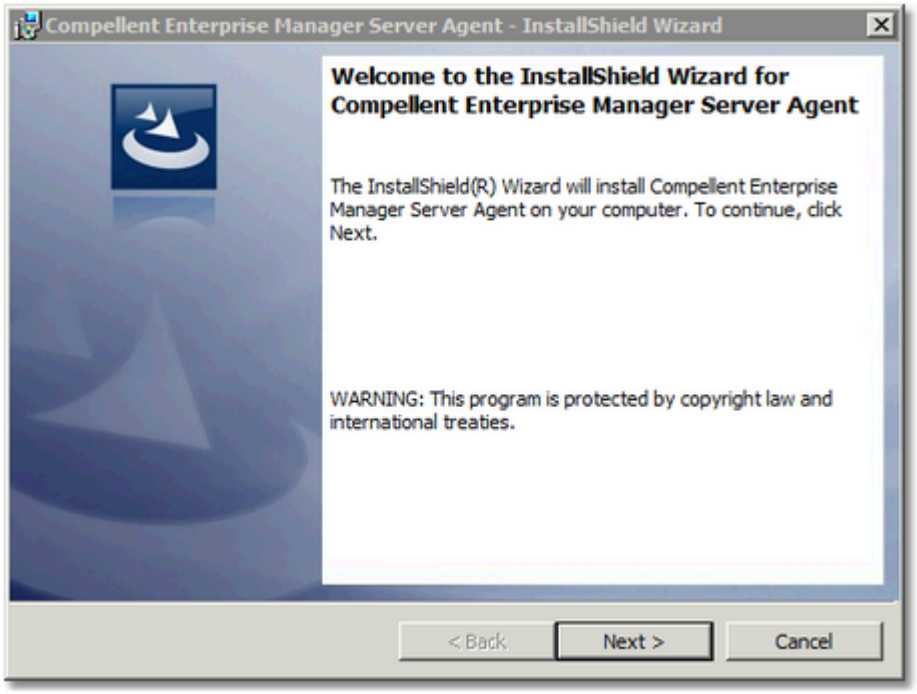

*Installing the Server Agent - Download*

3. When the download is complete, double-click the downloaded file.
4. A Security Warning dialog box appears. Click **Run**.


File Download - Security Warning
Do you want to run or save this file?
Name: CompellentEnterpriseManagerServerAgentSetup.msi
Type: Windows Installer Package, 2.24MB
From: 172.16.16.154
Run
Save
Cancel
While files from the Internet can be useful, this file type can potentially harm your computer. If you do not trust the source, do not run or save this software. What's the risk?

*Installing the Server Agent - Security Warning*

5. Click **Next**.


Compellent Enterprise Manager Server Agent - InstallShield Wizard
Welcome to the InstallShield Wizard for Compellent Enterprise Manager Server Agent
The InstallShield(R) Wizard will install Compellent Enterprise Manager Server Agent on your computer. To continue, click Next.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel

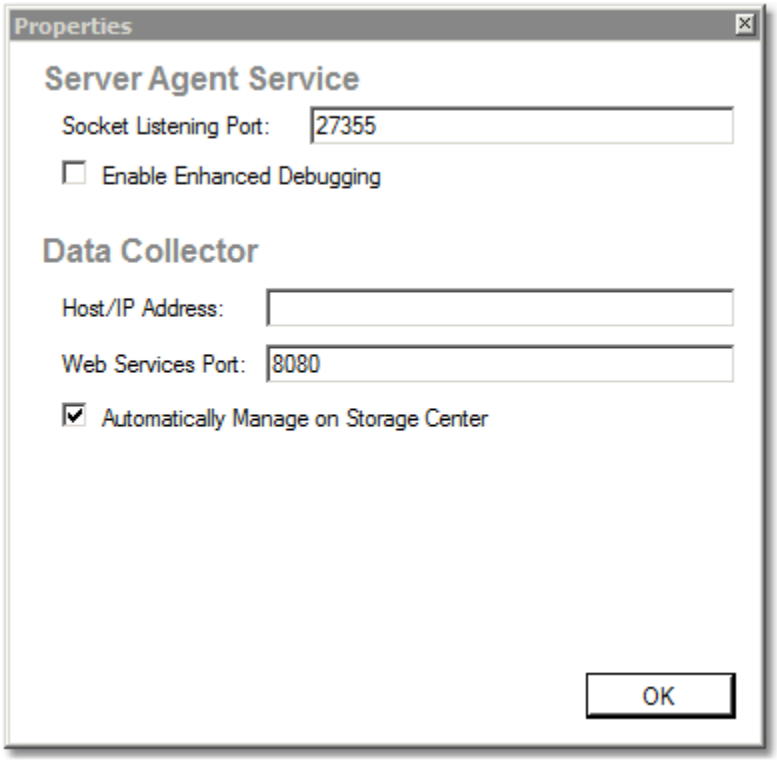
*Installing the Server Agent - Welcome*

6. Select **I Accept the terms in the license agreement** and click **Next**.

Compellent Enterprise Manager Server Agent - InstallShield Wizard
License Agreement
Please read the following license agreement carefully.
DELL END USER LICENSE AGREEMENT Ver. 1.3
TYPE-A SOFTWARE
THIS IS A LEGAL AGREEMENT BETWEEN YOU (EITHER AN INDIVIDUAL OR AN ENTITY) AND DELL PRODUCTS L.P. OR DELL GLOBAL B.V. (SINGAPORE BRANCH), ON BEHALF OF DELL INC. AND ITS WORLDWIDE SUBSIDIARIES AND AFFILIATES (COLLECTIVELY, "Dell" OR "DELL"), WHICH GOVERNS YOUR USE OF THE SOFTWARE. THE SOFTWARE SHALL MEAN COLLECTIVELY THE SOFTWARE PROGRAM, THE ASSOCIATED MEDIA, PRINTED MATERIALS, ONLINE OR ELECTRONIC DOCUMENTATION, AND ANY COPIES THEREOF, TO WHICH THIS AGREEMENT IS ATTACHED OR OTHERWISE ASSOCIATED (the "Software" or "SOFTWARE"). PLEASE READ THE TERMS AND CONDITIONS OF THIS
I accept the terms in the license agreement
I do not accept the terms in the license agreement
Print
InstallShield
< Back
Next >
Cancel

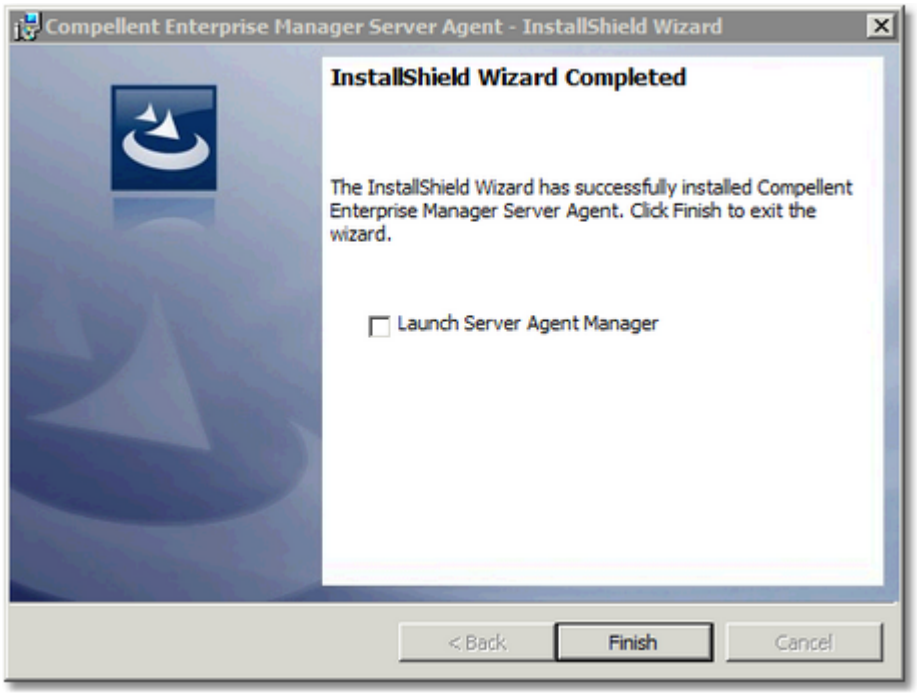
*Installing the Server Agent - License Agreement*

7. Register the Server Agent with Enterprise Manager Data Collector:
   - Enter the socket listening port. By default, 27355
   - Enter the host name or IP address of the Data Collector
   - Enter the web services port. By default, 8080
   - Check the box **Automatically Manage on Storage Center**
   - Click **OK**.




*Installing the Server Agent - Properties*

8. Once the installation is complete, click **Finish**.


Compellent Enterprise Manager Server Agent - InstallShield Wizard
InstallShield Wizard Completed
The InstallShield Wizard has successfully installed Compellent Enterprise Manager Server Agent. Click Finish to exit the wizard.
Launch Server Agent Manager
< Back
Finish
Cancel

*Installing the Server Agent - Installation Complete*

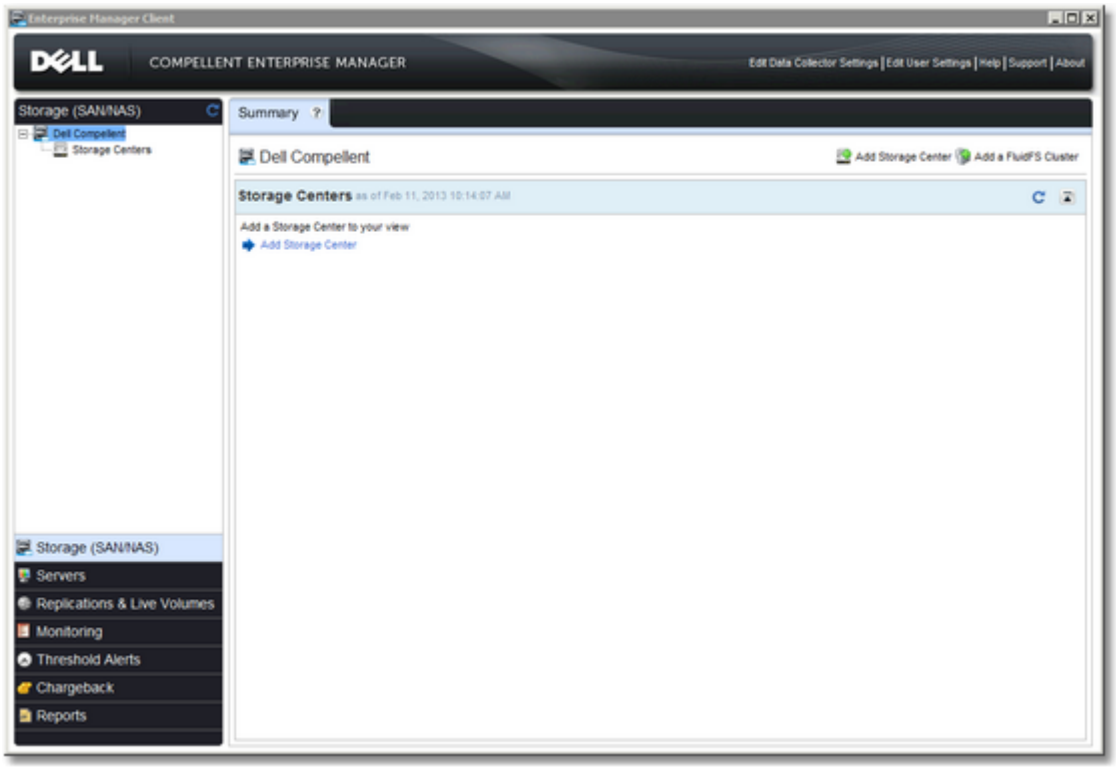
# Connecting to Data Collector

The Enterprise Manager Client can be used to connect to the Data Collector to view and manage multiple Storage Centers:

1. On the desktop, double-click the **Enterprise Manager Client** shortcut. The **Login to Compellent Enterprise Manager Client** window appears.
2. Fill the following fields:
   - **User Name**: Enterprise Manager user that was created while installing Data Collector
   - **Password**: User's password
   - **Host/IP**: host name or IP address of the server that hosts the Data Collector.
   - **Web Server Port**: If you changed the Web Server Port during installation, enter the updated port.
   - Click **Log In**.

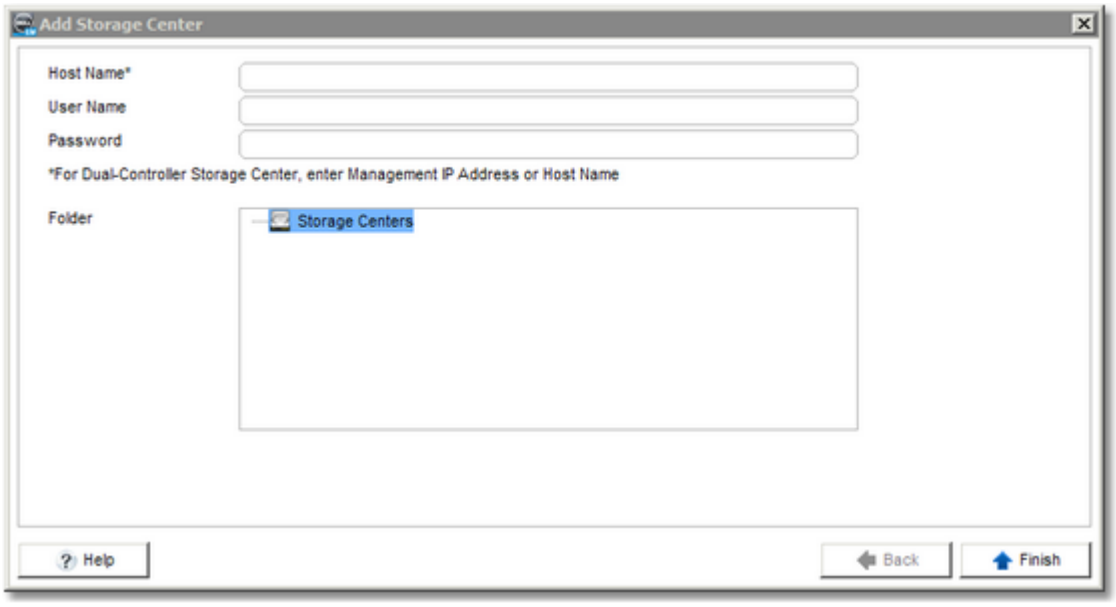
*Configuring Enterprise Manager Client - Login Page*

3. The Client connects to the Data Collector and displays the Storage (SAN/NAS) view. Click **Add Storage Center**.




*Configuring Enterprise Manager Client*

4. Fill the following fields:
   - **Host Name**: Host name or IP address of the Storage Center.
   - **User Name**: Name of an administrator user on the Storage Center.
   - **Password**: Password for the Storage Center user.




*Configuring Enterprise Manager Client - Add Storage Center*

5. Click **Finish**. The Storage Center appears in the list of Storage Centers.

# Configuring Dell Compellent Enterprise Manager

1. On the desktop, double-click the **Enterprise Data Collector Manager** shortcut. The **Login to Data Collector** window appears.
2. Enter your credentials and click **Log In**.

*Configuring Enterprise Manager Data Collector - Login Page*

2. From Dell Compellent Enterprise Manager, you can:
   - Add Enterprise Manager users
   - Add Storage Center volumes
   - Add servers to Storage Centers
   - Add FluidFS clusters to Enterprise Manager
   - Configure email notifications
   - Set up remote Storage Centers and QoS
   - Configure replications and Live Volumes
   - Predefine your disaster recovery plan.

*For more information, please refer to the Dell Compellent Enterprise Manager Administrator's Guide.*

# Integrating the ETL for BCO

Dell Compellent Enterprise Manager ETL for BMC Capacity Optimization is a connector specifically designed to interact with the BMC Capacity Optimization (BCO) environment. It relies on the BCO interface and features for integrating, managing and processing the performance metrics of your Dell systems.

Before installing, make sure that all the prerequisite operations have been properly completed (refer to the **Getting Started** chapter).

**This integration procedure was written for BMC Capacity Optimization v9.5.00 and may therefore slightly differ if you're using BMC Capacity Optimization v9.0.03.**

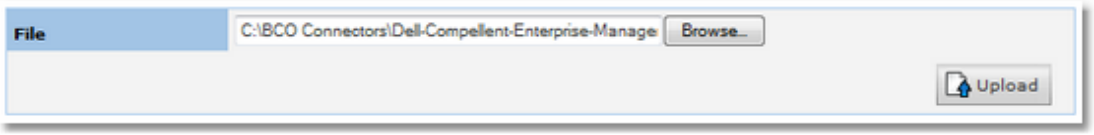
# Installing Dell Compellent Enterprise Manager ETL for BMC Capacity Optimization

This section provides the step-by-step procedure to upload Dell Compellent Enterprise Manager ETL for BMC Capacity Optimization into the BCO Console. The upload procedure is quick and easy, as it relies on the ***Upload patch or additional package*** mechanism accessible in the BCO Console under the section **Administration >System >Maintenance**.

## Uploading Dell Compellent Enterprise Manager ETL for BMC Capacity Optimization into the BCO Console

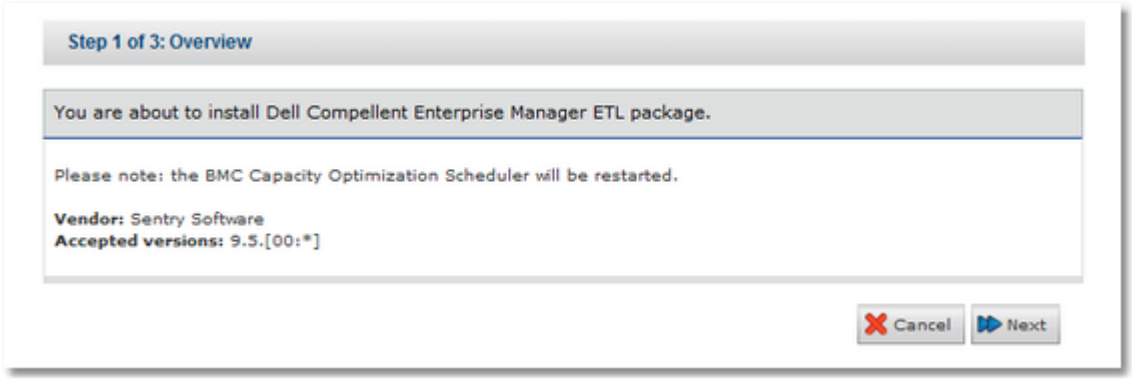
To upload Dell Compellent Enterprise Manager ETL for BMC Capacity Optimization into the BCO Console:

1. Access the BCO Console.
2. In the **Administration** tab, click **System > Maintenance.**
   - Verify the installation status of the already uploaded packages. If their status are "READY" or "RUNNING", wait for the installation to complete before proceeding.
   - At the bottom of the **Maintenance** page, locate the **Upload patch or additional package** file section:

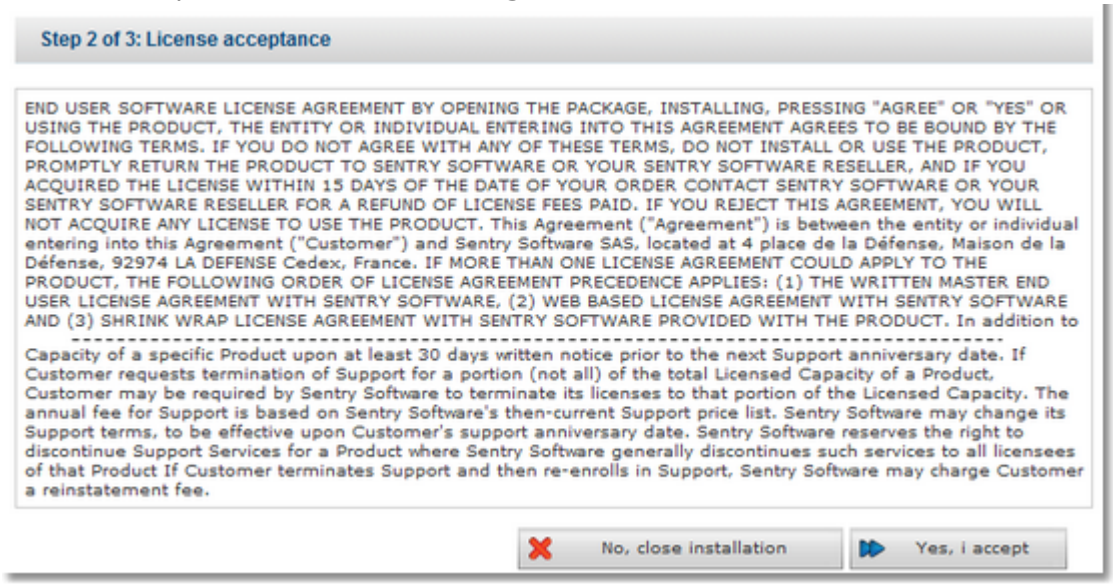



   - Click **Browse**.
   - Locate and select the file **Dell-Compellent-Enterprise-Manager-ETL-for-BCO-3.5.00.zip** if you're using BMC Capacity Optimization v9.5; **Dell-Compellent-Enterprise-Manager-ETL-for-BCO-3.5.00-Compatibility903.zip** if you're using BMC Capacity Optimization v9.0.03
   - Click **Upload**.

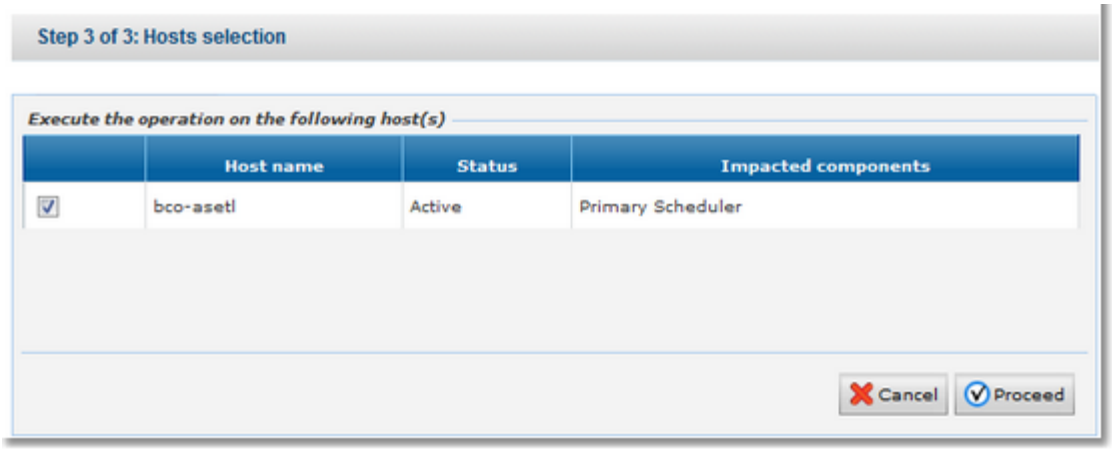
3. Read the **Overview** and click **Next** to continue.


Step 1 of 3: Overview
You are about to install Dell Compellent Enterprise Manager ETL package.
Please note: the BMC Capacity Optimization Scheduler will be restarted.
Vendor: Sentry Software
Accepted versions: 9.5.[00:*]
Cancel
Next

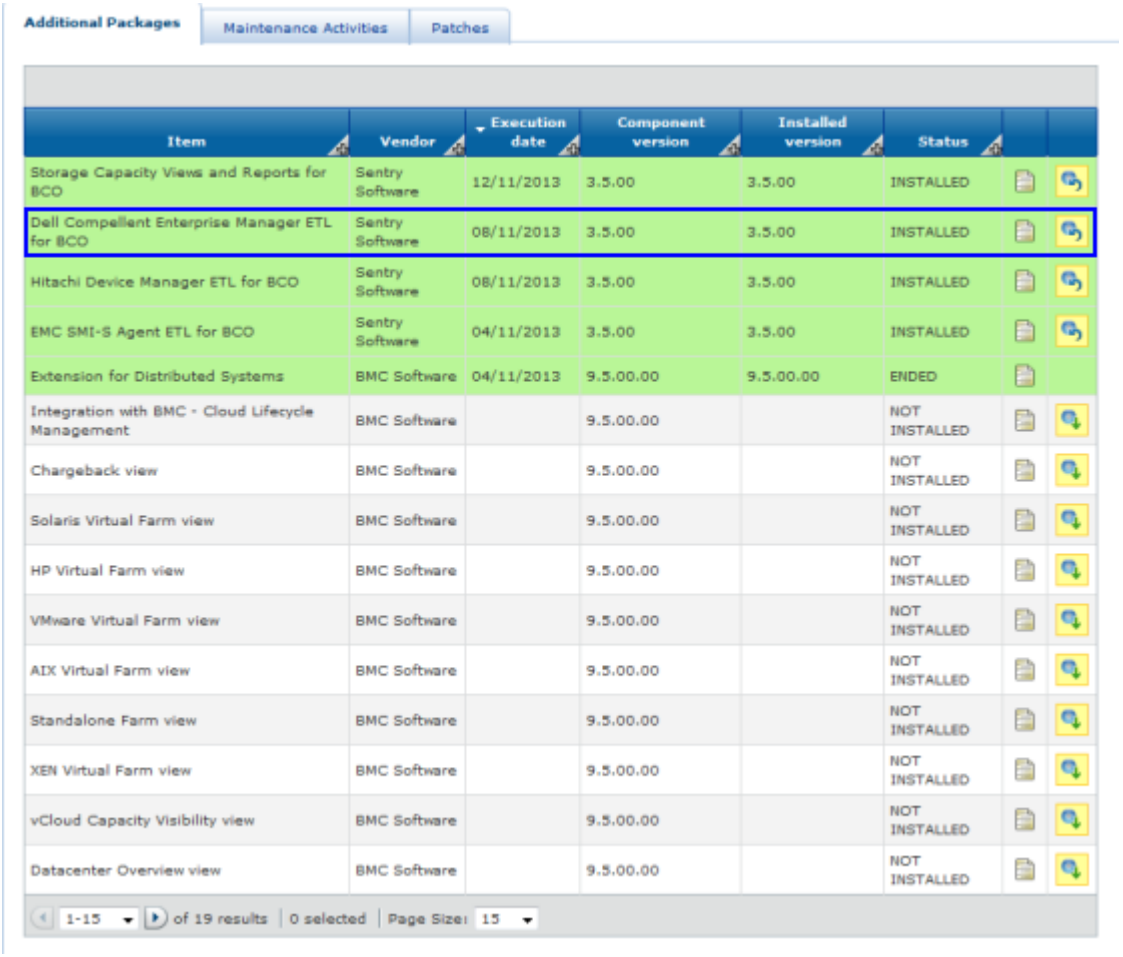
4. Read and accept the **End User License Agreement**.


Step 2 of 3: License acceptance
END USER SOFTWARE LICENSE AGREEMENT BY OPENING THE PACKAGE, INSTALLING, PRESSING "AGREE" OR "YES" OR USING THE PRODUCT, THE ENTITY OR INDIVIDUAL ENTERING INTO THIS AGREEMENT AGREES TO BE BOUND BY THE FOLLOWING TERMS. IF YOU DO NOT AGREE WITH ANY OF THESE TERMS, DO NOT INSTALL OR USE THE PRODUCT, PROMPTLY RETURN THE PRODUCT TO SENTRY SOFTWARE OR YOUR SENTRY SOFTWARE RESELLER, AND IF YOU ACQUIRED THE LICENSE WITHIN 15 DAYS OF THE DATE OF YOUR ORDER CONTACT SENTRY SOFTWARE OR YOUR SENTRY SOFTWARE RESELLER FOR A REFUND OF LICENSE FEES PAID. IF YOU REJECT THIS AGREEMENT, YOU WILL NOT ACQUIRE ANY LICENSE TO USE THE PRODUCT. This Agreement ("Agreement") is between the entity or individual entering into this Agreement ("Customer") and Sentry Software SAS, located at 4 place de la Défense, Maison de la Défense, 92974 LA DEFENSE Cedex, France. IF MORE THAN ONE LICENSE AGREEMENT COULD APPLY TO THE PRODUCT, THE FOLLOWING ORDER OF LICENSE AGREEMENT PRECEDENCE APPLIES: (1) THE WRITTEN MASTER END USER LICENSE AGREEMENT WITH SENTRY SOFTWARE, (2) WEB BASED LICENSE AGREEMENT WITH SENTRY SOFTWARE AND (3) SHRINK WRAP LICENSE AGREEMENT WITH SENTRY SOFTWARE PROVIDED WITH THE PRODUCT. In addition to
Capacity of a specific Product upon at least 30 days written notice prior to the next Support anniversary date. If Customer requests termination of Support for a portion (not all) of the total Licensed Capacity of a Product, Customer may be required by Sentry Software to terminate its licenses to that portion of the Licensed Capacity. The annual fee for Support is based on Sentry Software's then-current Support price list. Sentry Software may change its Support terms, to be effective upon Customer's support anniversary date. Sentry Software reserves the right to discontinue Support Services for a Product where Sentry Software generally discontinues such services to all licensees of that Product If Customer terminates Support and then re-enrolls in Support, Sentry Software may charge Customer a reinstatement fee.
No, close installation
Yes, i accept

5. Select the server on which the operation must be executed; that is the server on which the package will be saved. Click **Proceed** to continue.




6. A successful installation will result in a green line in the **Additional Packages** table.




*In case of unsuccessful outcome (e.g. a yellow WARNING line), click the icon to inspect the deployment log.*

7. Manually restart the scheduler service to complete the installation.

# Restarting the Scheduler Service

A manual restart of the scheduler service is required to complete installation of Dell Compellent Enterprise Manager ETL for BMC Capacity Optimization:

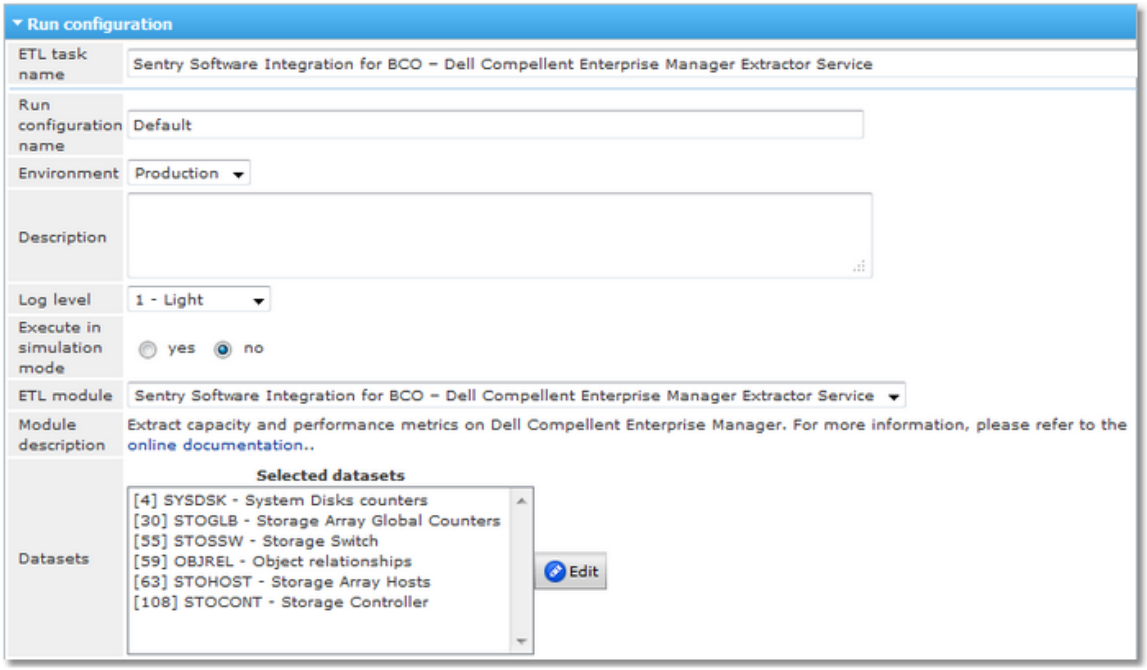
1. Open a shell command (SSH) on all the scheduler hosts and connect as **cpit** user
2. Navigate to the **BCO** home directory
   ```
   [cpit@bco ~]$ cd /opt/bmc/BCO
   ```
3. Execute the BCO script to restart the scheduler service
   ```
   [cpit@bco BCO]$ ./cpit restart scheduler
   ```

# Configuring the ETL for BCO

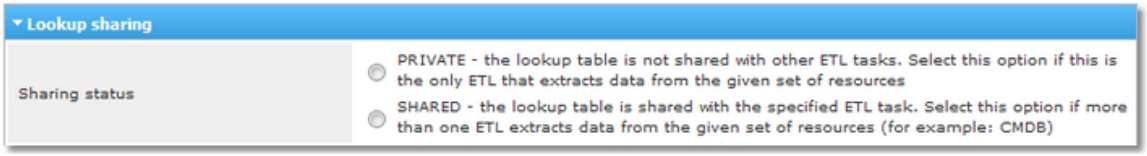
This chapter details every steps required to configure an ETL Service and add it as an ETL task responsible for extracting capacity and performance metrics on Dell storage systems from the Dell Compellent Enterprise Manager and feeding it into the BMC Capacity Optimization Data Warehouse.

To configure the ETL:

1. Access the configuration window:
   - In the **Administration** tab, click **ETL & System Tasks > ETL tasks**.
   - Press the **Add button**, and select **Add ETL**.
2. Expand the **Run configuration** menu:


Run configuration
ETL task name
Sentry Software Integration for BCO – Dell Compellent Enterprise Manager Extractor Service
Run configuration name
Default
Environment
Production
Description
Log level
1 - Light
Execute in simulation mode
yes
no
ETL module
Sentry Software Integration for BCO – Dell Compellent Enterprise Manager Extractor Service
Module description
Extract capacity and performance metrics on Dell Compellent Enterprise Manager. For more information, please refer to the online documentation..
Selected datasets
Datasets
[4] SYSDSK - System Disks counters
[30] STOGLB - Storage Array Global Counters
[55] STOSSW - Storage Switch
[59] OBJREL - Object relationships
[63] STOHOST - Storage Array Hosts
[108] STOCONT - Storage Controller
Edit

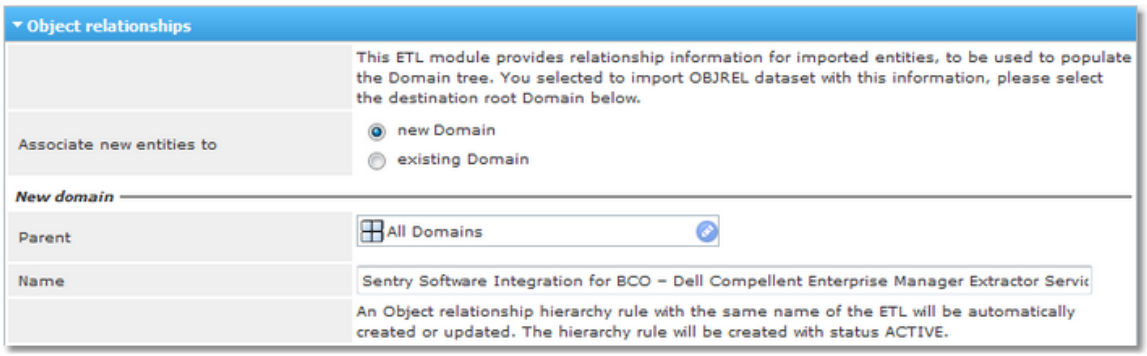
3. From the **ETL module** pull-down list, select **Sentry Software Integration for BCO - Dell Compellent Enterprise Manager Extractor Service**.
4. Click the **Edit** button to add all the available datasets:
   - In the **Available datasets** list, select the datasets to be added.
   - Click .
   - Click **Apply**.
5. Expand the **Lookup sharing** menu and select:


Lookup sharing
Sharing status
PRIVATE - the lookup table is not shared with other ETL tasks. Select this option if this is the only ETL that extracts data from the given set of resources
SHARED - the lookup table is shared with the specified ETL task. Select this option if more than one ETL extracts data from the given set of resources (for example: CMDB)

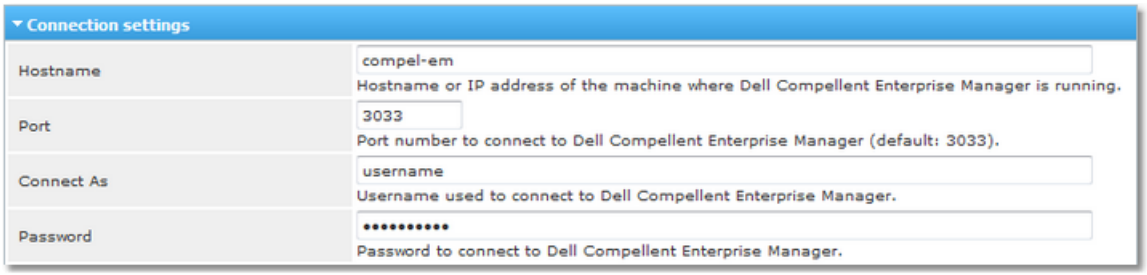
   - **PRIVATE** if only this ETL will extract data from the specified resources.
   - **SHARED** to avoid duplicates if several ETLs extract data from the same resources. You'll then

have to specify the ETL with which this ETL will share the information.

6. Expand the **Object relationship** menu to indicate the Domain tree the imported entities will populate:
   - choosing **new Domain** displays the domain default name: **Sentry Software Integration for BCO - Dell Compellent Enterprise Manager Extractor Service**.
   - choosing **existing Domain** allows you to select a specific domain.


Object relationships
This ETL module provides relationship information for imported entities, to be used to populate the Domain tree. You selected to import OBJREL dataset with this information, please select the destination root Domain below.
Associate new entities to
new Domain
existing Domain
New domain
Parent
All Domains
Name
Sentry Software Integration for BCO – Dell Compellent Enterprise Manager Extractor Servic
An Object relationship hierarchy rule with the same name of the ETL will be automatically created or updated. The hierarchy rule will be created with status ACTIVE.

7. Expand the **Connection settings** menu:


Connection settings
Hostname
compel-em
Hostname or IP address of the machine where Dell Compellent Enterprise Manager is running.
Port
3033
Port number to connect to Dell Compellent Enterprise Manager (default: 3033).
Connect As
username
Username used to connect to Dell Compellent Enterprise Manager.
Password
••••••••••
Password to connect to Dell Compellent Enterprise Manager.

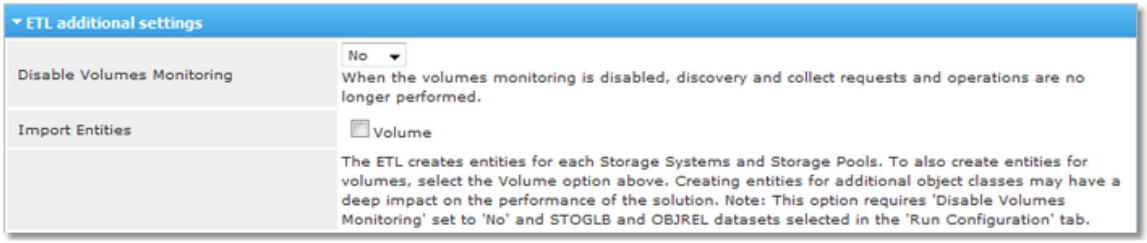
   - Enter the **hostname** or the **IP address** of the server where the Dell Compellent Enterprise Manager is running.
   - Indicate the **port number** used by the Dell Compellent Enterprise Manager (default: 3033).
   - Enter the username and password to connect to the Dell Compellent Enterprise Manager
8. Click **Save**.

# Disabling / Enabling Volumes Monitoring

Discovering and collecting volumes metrics are resource-intensive actions that can create extra workload on the system. To reduce the system resource consumption, administrators can disable volumes monitoring.

## To disable volumes monitoring:

1. Edit the **Dell Compellent Enterprise Manager ETL for BMC Capacity Optimization** Run Configuration.
2. Expand the **ETL additional settings** menu.


ETL additional settings
Disable Volumes Monitoring
No
When the volumes monitoring is disabled, discovery and collect requests and operations are no longer performed.
Import Entities
Volume
The ETL creates entities for each Storage Systems and Storage Pools. To also create entities for volumes, select the Volume option above. Creating entities for additional object classes may have a deep impact on the performance of the solution. Note: This option requires 'Disable Volumes Monitoring' set to 'No' and STOGLB and OBJREL datasets selected in the 'Run Configuration' tab.

*Disabling Volume Monitoring*

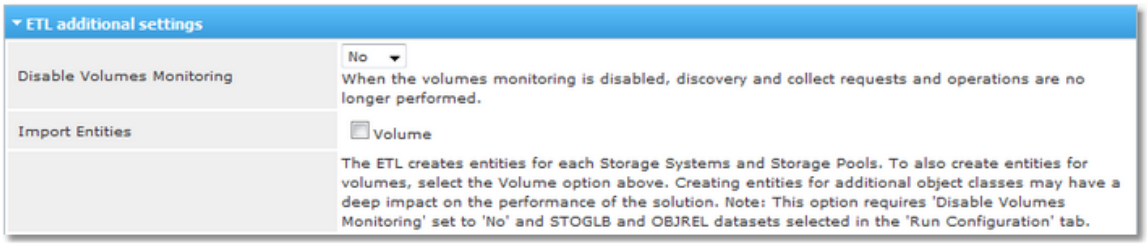
3. From the **Disable Volumes Monitoring** pull-down list, select **Yes**.
4. Click **Save**.

Discovery and collect requests are no longer performed and the following metrics are no longer available:

| Dataset | BCO 9.5 metrics | BCO 9.0.03 metrics |
|---|---|---|
| **STOGLB** | • ST_CONSUMED_CAPACITY_PCT (storage consumed capacity percentage)<br>• ST_OVERSUBSCRIBED_CAPACITY (storage oversubscribed capacity)<br>• ST_POOL_OVERSUBSCRIPTION_SITUATION (pool oversubscription situation)<br>• ST_POOL_SUBSCRIBED_CAPACITY (pool subscribed capacity).<br>• ST_POOL_SUBSCRIBED_CAPACITY_PCT (pool subscribed capacity percentage) | • ST_POOL_OVERSUBSCRIBED_TOTAL (pool oversubscribed total)<br>• ST_POOL_OVERSUBSCRIPTION_SITUATION (pool oversubscription situation)<br>• ST_POOL_SUBSCRIBED_CAPACITY_PCT (pool subscribed capacity percentage)<br>• ST_THINPOOL_SUBSCRIBED_TOTAL (thin pool subscribed total capacity).<br>• ST_USED_PCT (storage used space percentage) |
| **STOHOST** | • BYHOST_ALLOCATED (allocated space by host)<br>• BYHOST_SIZE (by host physical size) | • BYHOST_ALLOCATED (allocated space by host)<br>• BYHOST_SIZE (by host physical size) |

# To enable volumes monitoring:

1. Edit the **Dell Compellent Enterprise Manager ETL for BMC Capacity Optimization** Run Configuration.
2. Expand the **Run Configuration** menu to verify that the **STOGLB** and **OBJREL** datasets are selected.
3. Expand the **ETL additional settings** menu.


ETL additional settings
Disable Volumes Monitoring
No
When the volumes monitoring is disabled, discovery and collect requests and operations are no longer performed.
Import Entities
Volume
The ETL creates entities for each Storage Systems and Storage Pools. To also create entities for volumes, select the Volume option above. Creating entities for additional object classes may have a deep impact on the performance of the solution. Note: This option requires 'Disable Volumes Monitoring' set to 'No' and STOGLB and OBJREL datasets selected in the 'Run Configuration' tab.

*Enabling Volumes Monitoring*

4. From the **Disable Volumes Monitoring** pull-down list, select **No**.
5. Check the **Volume** box to make the volume entity appear in the Domain tree.

**Please note that creating entities for additional object classes may have a deep impact on the performance of the application.**

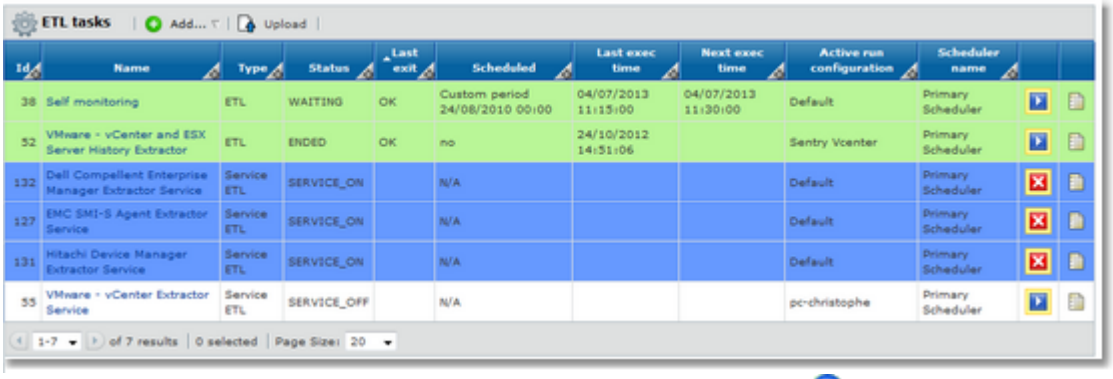
6. Click **Save**.

# Setting the Collect Frequency

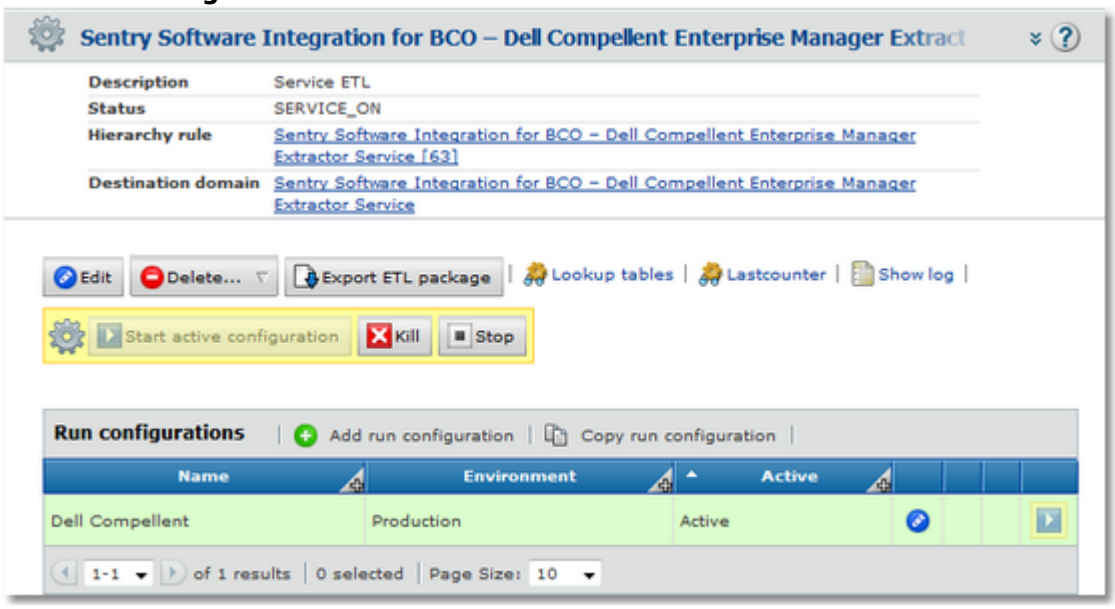
The collect frequency is the rate at which data is collected. The collect frequency is set to 15 minutes by default but can be modified to better suit your needs.

To set the collect frequency:

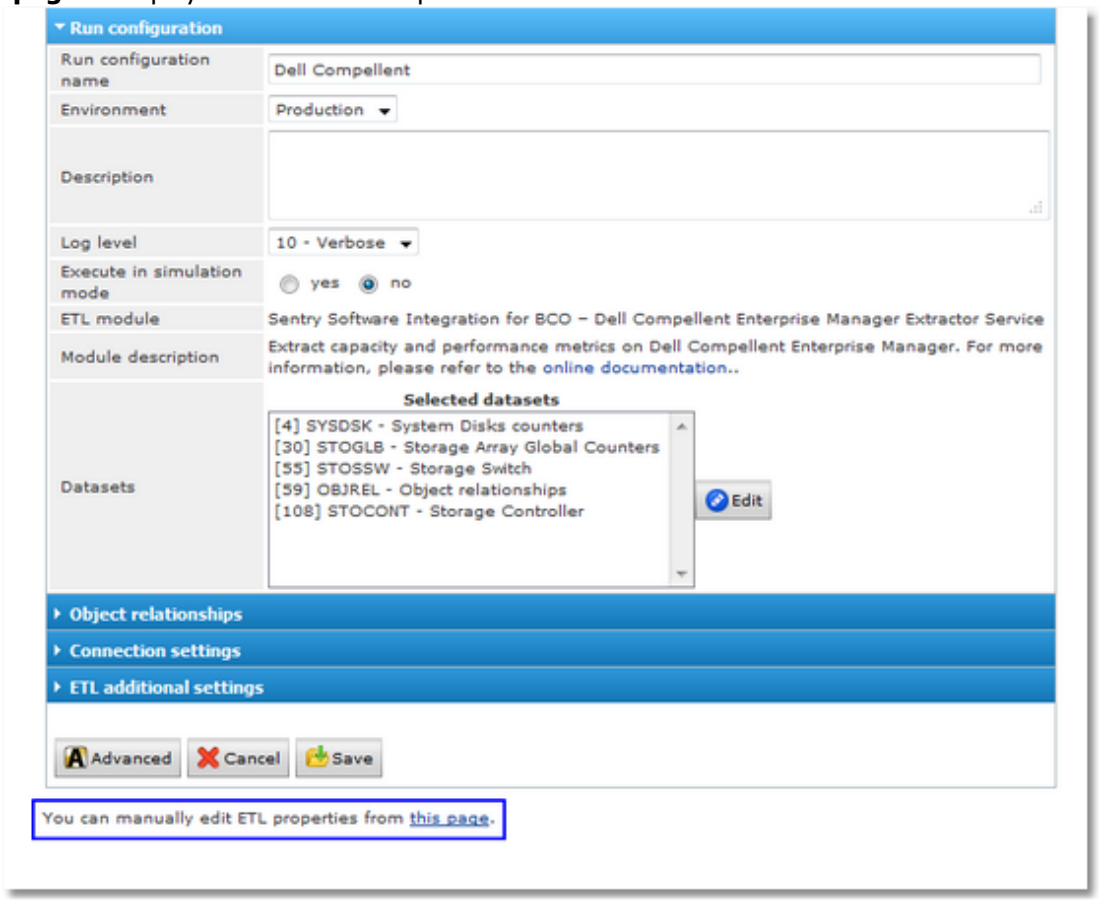
1. Edit the **Dell Compellent Enterprise Manager ETL for BMC Capacity Optimization** Run Configuration:
   - In the **Administration** tab, click **ETL & System Tasks > ETL tasks**.
   - Click the link **Sentry Software Integration for BCO - Dell Compellent Enterprise Manager Extractor Service**.


ETL tasks
Add...
Upload
Id
Name
Type
Status
Last exit
Scheduled
Last exec time
Next exec time
Active run configuration
Scheduler name
38 Self monitoring ETL WAITING OK Custom period 24/08/2010 00:00 04/07/2013 11:15:00 04/07/2013 11:30:00 Default Primary Scheduler
52 VMware - vCenter and ESX Server History Extractor ETL ENDED OK no 24/10/2012 14:51:06 Sentry Vcenter Primary Scheduler
132 Dell Compellent Enterprise Manager Extractor Service Service ETL SERVICE_ON N/A Default Primary Scheduler
127 EMC SMI-S Agent Extractor Service Service ETL SERVICE_ON N/A Default Primary Scheduler
131 Hitachi Device Manager Extractor Service Service ETL SERVICE_ON N/A Default Primary Scheduler
55 VMware - vCenter Extractor Service Service ETL SERVICE_OFF N/A pc-christophe Primary Scheduler
1-7 of 7 results 0 selected Page Size: 20

   - Click the **Stop** button to stop the service execution; then click the **Edit** button available in the **Run configurations** section..



2. Click the link provided at the bottom of the page **You can manually edit ETL properties from this page** to display a list of editable options.



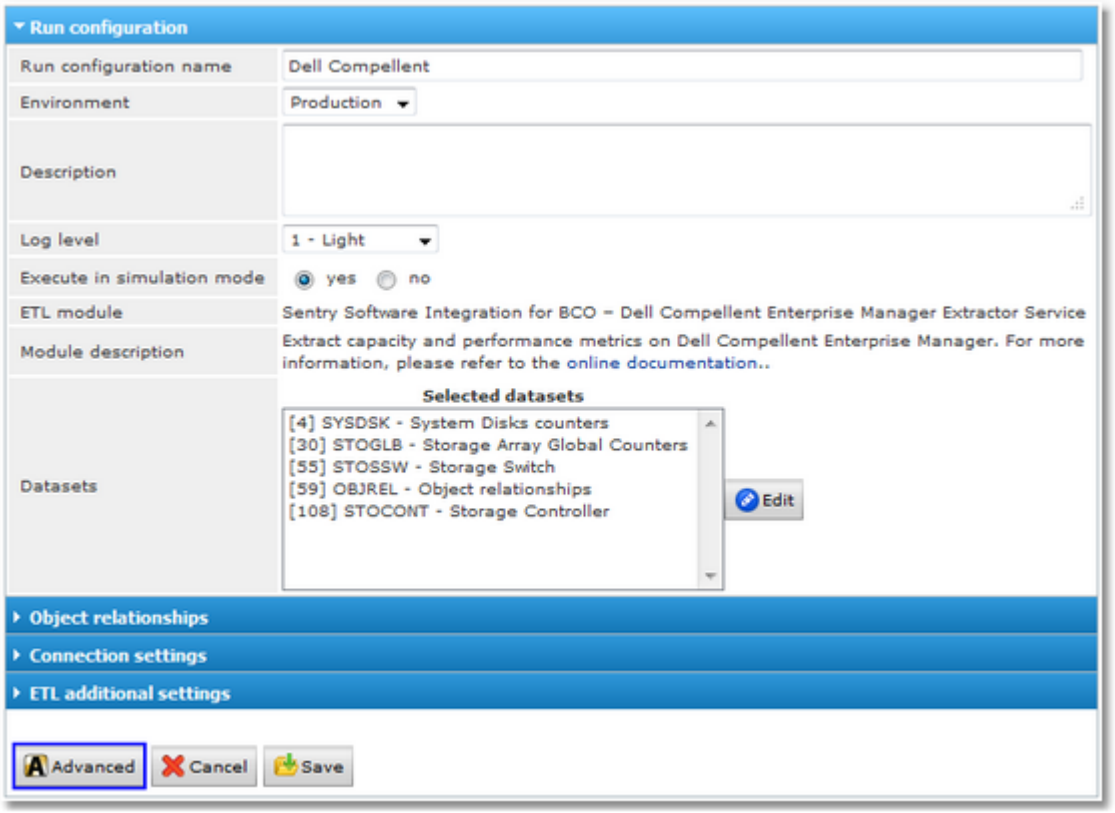

3. Locate the **service.period** option, and enter the number of milliseconds corresponding to the frequency at which data will be collected.

# Setting the Data Saving Frequency

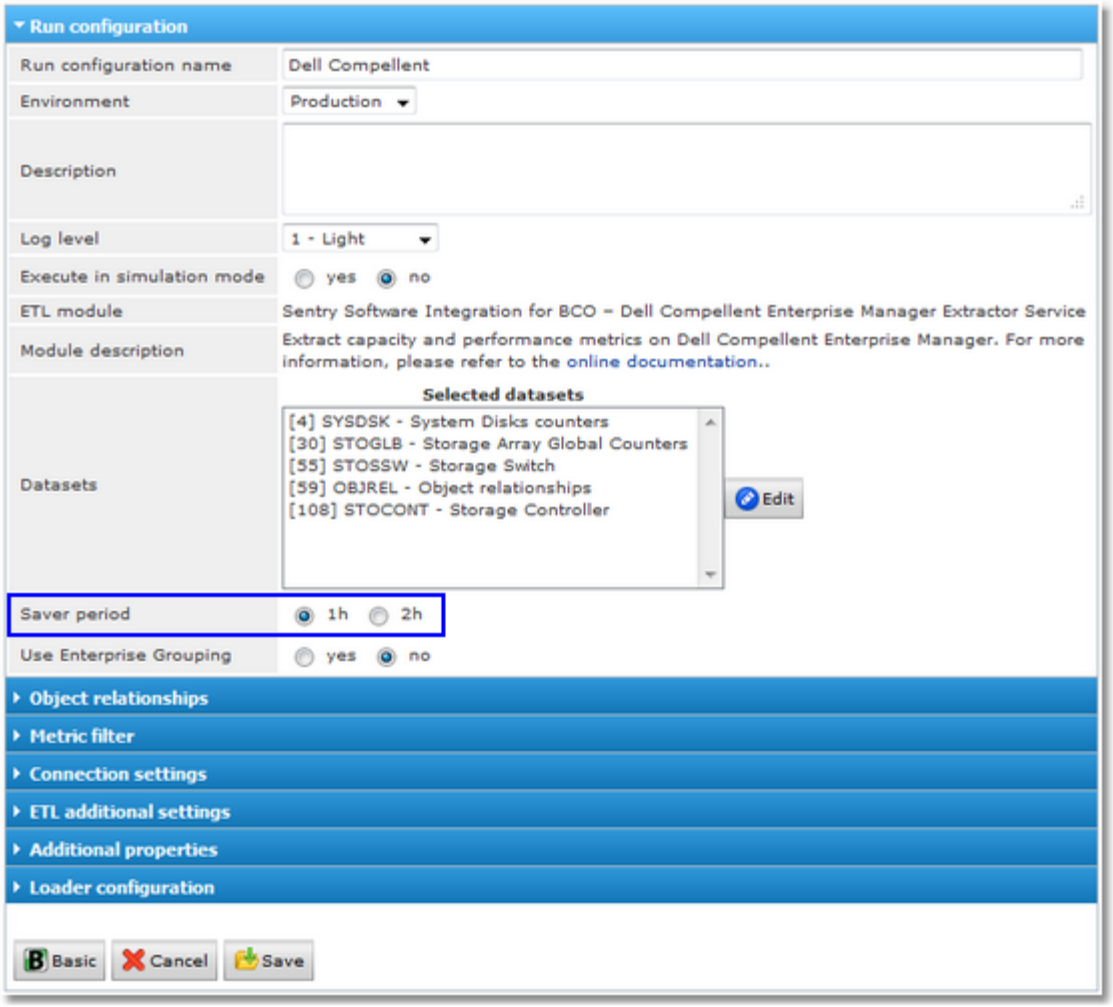
The data saving frequency is the rate at which the data will be saved. It can be set either to 1 hour or 2 hour.

To set the data saving frequency:

1. Create or edit the **Dell Compellent Enterprise Manager ETL for BMC Capacity Optimization** Run Configuration
2. Expand the **Run configuration** menu and click the **Advanced** button



3. Locate the **Saver period** option and select the frequency at which the ETL module will save the data (1h or 2h).




4. Click **Save**.

# Running Sentry Software Integration for BCO - Dell Compellent Enterprise Manager Extractor Service Task

The **Sentry Software Integration for BCO - Dell Compellent Enterprise Manager Extractor Service** task can be run manually to retrieve performance metrics.

*The steps listed in this section are not mandatory and are required only if the ETLs are not already scheduled for execution.*

To run the **Sentry Software Integration for BCO - Dell Compellent Enterprise Manager Extractor Service** task:

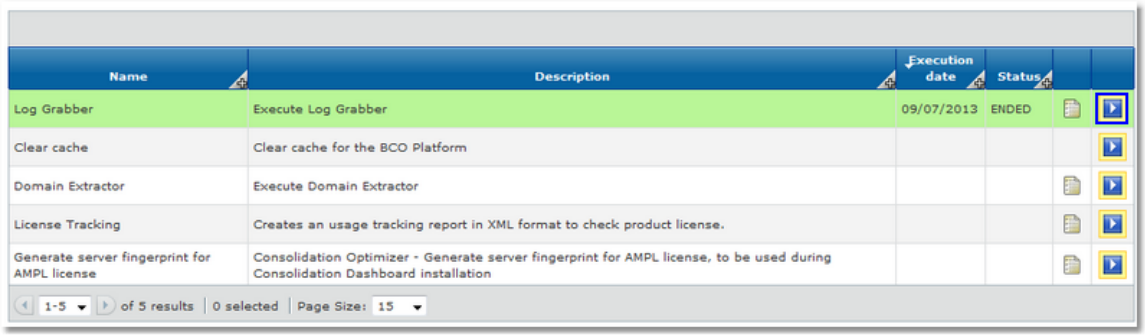
1. Access the BCO Console
2. In the **Administration** tab, select **ETL & System Tasks > ETL Tasks**.
3. Click to execute the **Sentry Software Integration for BCO - Dell Compellent Enterprise Manager Extractor Service** ETL task.

When the execution is complete, the value of the **Status** column in the ETL tasks table changes from **Waiting** to **Ended**.

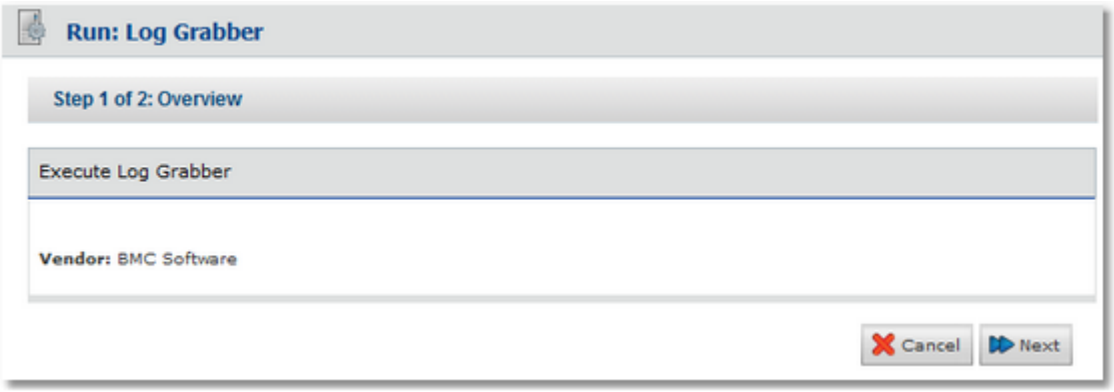
# Generating Log Files

The Sentry Software support team may ask you to provide log files to better diagnose the nature of a problem when you need help on a specific matter. These log files can be obtained by executing the Log Grabber from the BCO console:

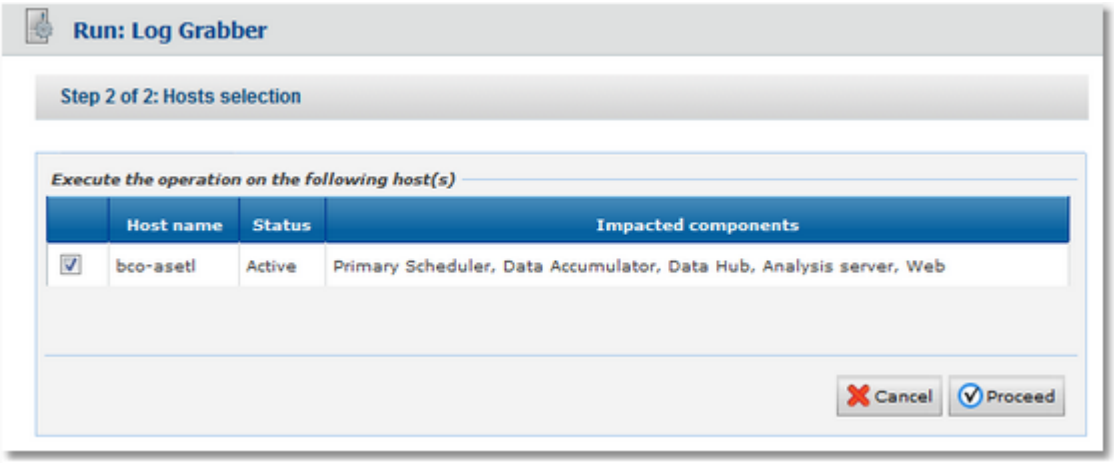
1. Access the BCO Console.
2. In the **Administration** tab, click **System > Maintenance**.
3. Open the **Maintenance Activities** tab.



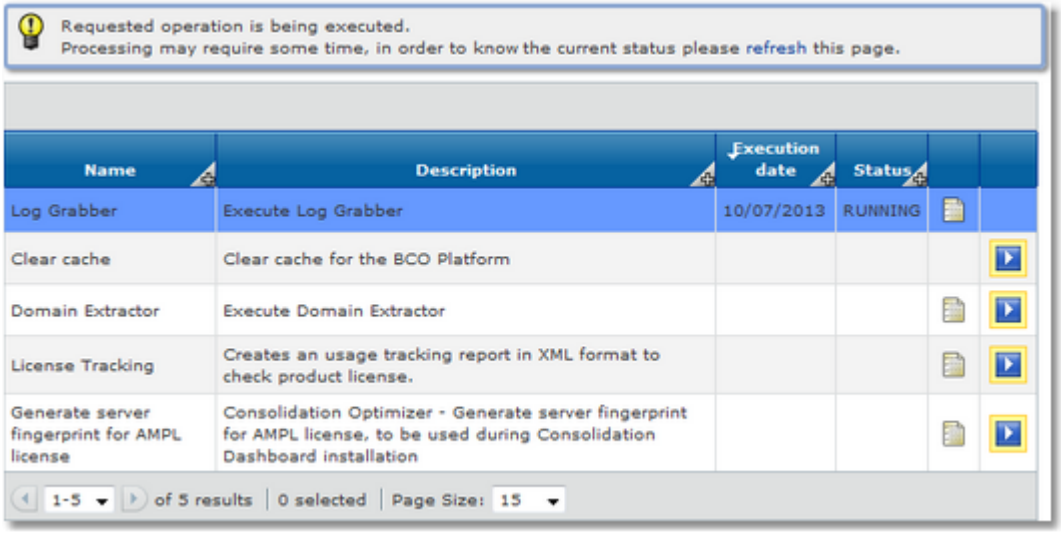

4. Click to execute the Log Grabber.



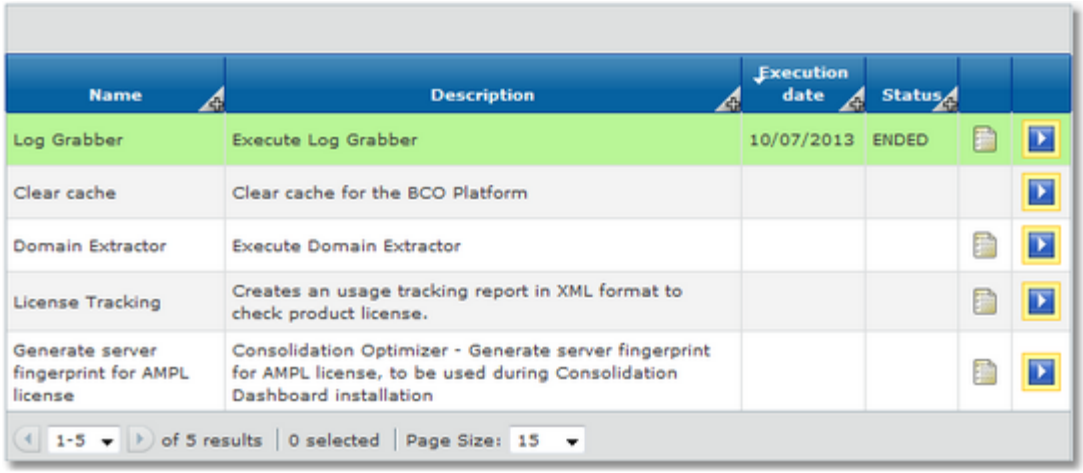

5. Click **Next**.



6. Select the host for which you wish to obtain logs and click **Proceed** to execute the Log Grabber.


Requested operation is being executed.
Processing may require some time, in order to know the current status please refresh this page.
Name
Description
Execution date
Status
Log Grabber
Execute Log Grabber
10/07/2013
RUNNING
Clear cache
Clear cache for the BCO Platform
Domain Extractor
Execute Domain Extractor
License Tracking
Creates an usage tracking report in XML format to check product license.
Generate server fingerprint for AMPL license
Consolidation Optimizer - Generate server fingerprint for AMPL license, to be used during Consolidation Dashboard installation
1-5
of 5 results
0 selected
Page Size: 15

7. Refresh the **Maintenance Activities** page to check the request status.




8. When the request status is "ENDED", click to view the deployment log.

9. Click to download the deployment log.

# Reference Guide

This section provides detailed information on the performance metrics collected by the Sentry Software Integration for BCO - Dell Compellent Enterprise Manager Extractor Service from the Dell Compellent Enterprise Manager and made available in the BCO Console. Metrics are available in the following datasets.

- STOCONT Dataset Performance Metrics
- STOGLB Dataset Performance Metrics
- STOSSW Dataset Performance Metrics
- SYSDSK Dataset Performance Metrics

For additional information about datasets management, refer to BMC Capacity Optimization documentation.

# Performance Metrics for BCO v9.5

For BCO v9.5, the performance metrics are available in the following datasets:

- STOCONT Dataset Performance Metrics
- STOGLB Dataset Performance Metrics
- STOHOST Dataset Performance Metrics
- STOSSW Dataset Performance Metrics
- SYSDSK Dataset Performance Metrics

## [108] STOCONT Dataset Performance Metrics for BCO v9.5

Metrics are presented in table, where each column represents a particular variable, and each row corresponds to a given member of the STOCONT dataset.

| Metric | Unit | Name | Description | Value Type |
|---|---|---|---|---|
| BYCONT_PORT_NUM | N/A | Number of available ports by controller | Number of available ports by controller. The subobject specifies the controller name. | Configuration data (string) |
| BYCONT_PROCESSOR_UTIL | PCT | Processor utilization by controller | Processor utilization by controller. The subobject specifies the controller name. | Percentage counter |
| BYCONT_RESPONSE_TIME | MILLIS | Response time by controller | Response time by controller. The subobject specifies the controller name. | Elapsed time |
| BYCONT_TRANSFER_RATE | BYTE/S | Transfer rate by controller | Transfer rate by controller. The subobject specifies the controller name. | A frequency, in events/sec |

## Additional Columns

| Column Name | Unit | Name | Description |
|---|---|---|---|
| CONTNM | N/A | Storage controller name | Storage controller name. |
| DS_SYSNM | N/A | System name in the Datasource | The name of the system as in the Datasource (for lookup). |
| DURATION | S | Duration | Duration of the sample. |
| SYSNM | N/A | System name | The name of the system proposed for identification in BMC Capacity Optimization; if absent, the DS_SYSNM is used. |
| SYSTYPENM | N/A | Object type | Object type name. |

| Column Name | Unit | Name | Description |
|---|---|---|---|
| TS | N/A | Timestamp | Start timestamp of the sample [YYYY-MM-DD HH:MI:SS]. |

For detailed information about datasets, refer to the BMC Capacity Optimization documentation.

# [30] STOGLB Dataset Performance Metrics for BCO v9.5

Metrics are presented in a table, where each column represents a particular variable, and each row corresponds to a given member of the STOGLB dataset.

| Metric | Entity | Unit | Name | Description | Value Type |
|---|---|---|---|---|---|
| ST_AVAILABLE_CAPACITY | Storage Area Network, Storage Pool | BYTES | Available Capacity | Capacity not consumed (for storage systems: unused raw space plus available capacity in storage pools) | Negative accumulation counter |
| ST_AVAILABLE_CAPACITY_PCT | Storage Pool | PCT | Available Capacity Percentage | Percentage of the storage capacity that is not consumed | Percentage counter |
| ST_AVAILABLE_FOR_STORAGE_POOLS | Storage Area Network | BYTES | Available Capacity for Storage Pools | Raw space available for storage pool creation | Negative accumulation counter |
| ST_AVAILABLE_IN_STORAGE_POOLS | Storage Area Network | BYTES | Available Capacity in Storage Pools | Sum of space not consumed in all storage pools | Negative accumulation counter |
| ST_CAPACITY | Storage Area Network, Storage Pool | BYTES | Storage Capacity | Total capacity (for storage systems: unused raw space plus sum of the capacity for all storage pools) | Generic counter, absolute value |
| ST_CONFIG_SIZE | Storage Pool | BYTES | Storage Configured Space | Overall size of the component (for a storage system, this value is the sum of the raw size of all disks; for a storage pool this value is the external size) | Generic counter, absolute value |
| ST_CONSUMED_CAPACITY | Storage Area Network, Storage Pool | BYTES | Storage Consumed Capacity | Actually consumed capacity | Generic counter, absolute value |

| Metric | Entity | Unit | Name | Description | Value Type |
|---|---|---|---|---|---|
| ST_CONSUMED_CAPACITY_PCT* | Storage Area Network, Storage Pool | PCT | Storage Consumed Capacity Percentage | Percentage of capacity actually consumed | Percentage counter |
| ST_OVERSUBSCRIBED_CAPACITY* | Storage Area Network, Storage Pool | BYTES | Storage Oversubscribed Capacity | Storage subscribed capacity exceeding the actual capacity of the component | Generic counter, absolute value |
| ST_POOL_OVERSUBSCRIPTION_SITUATION* | Storage Pool | | Pool Oversubscription Situation | Identify the over-subscribed pools in danger i.e. thin pools where Subscribed Capacity Percentage is greater than 100 % and the Consumed Capacity Percentage crosses the threshold | Configuration data (string) |
| ST_POOL_SUBSCRIBED_CAPACITY* | Storage Pool | BYTES | Pool Subscribed Capacity | Sum of the host visible capacity for all volumes in the storage pool. Can be greater than the actual capacity of the storage pool for over-subscribed thin pools. | Configuration data (string) |
| ST_POOL_SUBSCRIBED_CAPACITY_PCT* | Storage Pool | PCT | Pool Subscribed Capacity Percentage | Subscribed capacity, in percentage of the capacity of the storage pool. Can exceed 100% for thin pools, therefore called oversubscribed | Percentage counter |
| ST_POOL_TYPE | Storage Pool | | Array Pool Type | Type of the pool | Configuration data (string) |
| ST_SID | Storage Area Network | | Storage Device Unique Identifier | Unique identifier of the storage device | Configuration data (string) |
| ST_SIZE | Storage Area Network | BYTES | Storage Size | Sum of the host visible capacity for all volumes in the storage pool. Can be greater than the actual capacity of the storage pool for over-subscribed thin pools | Generic counter, absolute value |
| ST_SYSTEM_BANDWIDTH | Storage Area Network | BYTE/S | System Bandwidth | Bandwidth available in storage system | Configuration data (string) |
| ST_SYSTEM_BANDWIDTH_UTIL | Storage Area Network | PCT | System Bandwidth Utilization | Bandwidth consumed in storage system | Percentage counter |
| ST_SYSTEM_MODEL | Storage Area Network | | Storage Array Model | Model of the system | Configuration data (string) |
| ST_SYSTEM_PORT_NUM | Storage Area Network | | Storage Array Port Number | Total number of ports | Configuration data (string) |

| Metric | Entity | Unit | Name | Description | Value Type |
|---|---|---|---|---|---|
| ST_SYSTEM_SUBSCRIBED_CAPACITY | Storage Area Network | BYTES | Storage Subscribed Capacity | Sum of the host visible capacity for all volumes. Can be greater than the actual capacity of the storage system with over-subscribed thin pools | Generic counter, absolute value |
| ST_SYSTEM_TRANSFER_BYTE_RATE | Storage Area Network | BYTE/S | System Transfer Byte Rate | Total data traffic (in and out, read and write) | A frequency, in events/sec |
| ST_SYSTEM_VENDOR | Storage Area Network | BYTES | Vendor | Vendor | Configuration data (string) |
| ST_VOLUME_CONSUMED_CAPACITY | Storage - Volume | BYTES | Volume Consumed Capacity | Amount of capacity that has been actually consumed by the host (for thin volumes, this value will typically be less than the host visible capacity; for traditional volumes this value always equals the host visible capacity) | Positive accumulation counter |
| ST_VOLUME_CONSUMED_CAPACITY_PCT | Storage - Volume | PCT | Volume Consumed Capacity Percentage | Percentage of the volume subscribed capacity that has been actually consumed by the host. Will be typically less than 100% for thin volumes. Will be exactly 100% for all traditional volumes | Percentage counter |
| ST_VOLUME_HOST_VISIBLE_CAPACITY | Storage - Volume | BYTES | Host Volume Visible Capacity | Amount of capacity that has been subscribed and can be "seen" by the host | Configuration data (string) |
| ST_VOLUME_MAPPED | Storage - Volume | | Volume Mapped | Whether the LUN is mapped to at least one host | Configuration data (string) |
| ST_VOLUME_RAID_LEVEL | Storage - Volume | | Volume RAID Level | RAID level of the volume | Configuration data (string) |
| ST_VOLUME_RESPONSE_TIME | Storage - Volume | MILLIS | Volume Response Time | Average time taken by the controller to complete read and write requests during the polling period | Elapsed time |
| ST_VOLUME_TIME_SINCE_LAST_ACTIVITY | Storage - Volume | | Volume Time Since Last Activity | Number of days since the last read or write operation has been observed on the monitored volume. | Configuration data (string) |
| ST_VOLUME_TRANSFER_BYTE_RATE | Storage - Volume | BYTE/S | Volume Transfer Byte Rate | Data traffic (read and write) on the volume | A frequency, in events/sec |

**These metrics will be missing if volumes monitoring is disabled.*

## Additional Columns

| Column Name | Unit | Name | Description |
|---|---|---|---|
| DS_SYSNM | N/A | System name in the Datasource | The name of the system as in the Datasource (for lookup) |
| DURATION | S | Duration | Duration of the sample (in seconds) |
| SYSNM | N/A | Storage name | The name of the storage system |
| SYSTYPENM | N/A | Object type | Object type name |
| TS | N/A | Timestamp | Start timestamp of the sample [YYYY-MM-DD HH:MI:SS] |

For detailed information about datasets, refer to the BMC Capacity Optimization documentation.

# [63] STOHOST Dataset Performance Metrics for BCO v9.5

Metrics are presented in table, where each column represents a particular variable, and each row corresponds to a given member of the STOHOST dataset.

| Metric | Unit | Name | Description | Value Type |
|---|---|---|---|---|
| BYHOST_ALLOCATED* | BYTES | Allocated Space by Host | Allocated Space by Host in Bytes | Positive accumulation counter |
| BYHOST_SIZE* | BYTES | By Host Physical Size | Physical capacity by host | Positive accumulation counter |

**These metrics will be missing if volumes monitoring is disabled.*

## Additional Columns

| Column Name | Unit | Name | Description |
|---|---|---|---|
| DS_SYSNM | N/A | System name in the Datasource | The name of the system as in the Datasource (for lookup) |
| DURATION | S | Duration | Duration of the sample (in seconds) |
| GOLEVELS | N/A | Grouping Object Levels | Levels for populating a grouping object, colon separated |
| SUBOBJNM | N/A | Host name | The name of the host |

| Column Name | Unit | Name | Description |
|---|---|---|---|
| SYSNM | N/A | Storage name | The name of the storage system |
| SYSTYPENM | N/A | Object type | Object type name |
| TS | N/A | Timestamp | Start timestamp of the sample [YYYY-MM-DD HH:MI:SS] |

For detailed information about datasets, refer to the BMC Capacity Optimization documentation.

# [55] STOSSW Dataset Performance Metrics for BCO v9.5

Metrics are presented in a table, where each column represents a particular variable, and each row corresponds to a given member of the STOSSW dataset.

| Metrics | Unit | Name | Description | Val Type |
|---|---|---|---|---|
| BYPORT_ADDRESS | N/A | Storage switch port address | Storage switch port address. | Configuration data (string) |
| BYPORT_BANDWIDTH | BIT/S | Bandwidth of the storage switch port | Bandwidth of the storage switch port. | Configuration data (string) |
| BYPORT_BANDWIDTH_UTIL | PERCENTAGE | Bandwidth utilization of the storage switch port | Bandwidth utilization of the storage switch port. | Percentage counter |
| BYPORT_BYTE_RATE | BYTE/S | Input/output traffic rate for the port | Input/output traffic rate for the port. | A frequency, in events/sec |
| BYPORT_CONTROLLER_NAME | N/A | Storage switch port controller name | Storage switch port controller name. | Configuration data (string) |
| BYPORT_TYPE | N/A | Storage switch port type | Storage switch port type. | Configuration data (string) |

## Additional Columns

| Column Name | Unit | Name | Description |
|---|---|---|---|
| DS_SYSNM | N/A | System name in the Datasource | The name of the system as in the Datasource (for lookup). |
| DURATION | S | Duration | Duration of the sample (in seconds). |
| GOLEVELS | N/A | Grouping Object Levels | Levels for populating a grouping object, colon separated. |
| LOCATIONNM | N/A | Location Name | Physical location of the measured object; if absent, assumed UNKNOWN. |
| PORTNM | N/A | Storage switch port name | Storage switch port name. |

| Column Name | Unit | Name | Description |
|---|---|---|---|
| SYSNM | N/A | System name | The name of the system proposed for identification in BMC Capacity Optimization; if absent, the DS_SYSNM is used. |
| SYSTYPENM | N/A | Object type | Object type name. |
| TS | N/A | Timestamp | Start timestamp of the sample [YYYY-MM-DD HH:MI:SS]. |

For detailed information about datasets, refer to the BMC Capacity Optimization documentation.

# [4] SYSDSK Dataset Performance Metrics for BCO v9.5

Metrics are presented in a table, where each column represents a particular variable, and each row corresponds to a given member of the SYSDSK dataset.

## Metrics

| Metrics | Unit | Name | Description | Val Type |
|---|---|---|---|---|
| BYDISK_MODEL | N/A | Model by Disk | Model of the Disk. | Configuration data (string) |
| BYDISK_READ_RATE | BYTE/S | Disk Read Rate by Disk | The average bytes per second read from this disk device during the interval. The sub-object specifies the disk id. | A frequency, in events/sec |
| BYDISK_RESPONSE_TIME | MILLIS | Disk Response Time | The average time (in milliseconds) for I/O requests issued to the device to be served. This includes the time spent by the requests in queue and the time spent servicing them. | Generic counter, absolute value, weighted |
| BYDISK_SIZE | BYTES | Size by Disk | Disk size (bytes). | Configuration data (string) |
| BYDISK_TRANSFER_RATE | BYTE/S | Disk Transfer Rate by Disk | The average bytes per second transferred to or from this disk device during the interval. The sub-object specifies the Disk id. | A frequency, in events/sec |
| BYDISK_WRITE_RATE | BYTE/S | Disk Write Rate by Disk | The average bytes per second written to this disk device during the interval. The sub-object specifies the disk id. | RATE |

## Additional Columns

| Column Name | Unit | Name | Description |
|---|---|---|---|
| DS_SYSNM | N/A | System name in the Datasource | The name of the system as in the Datasource (for lookup). |
| DSKNM | N/A | Disk Name | The name of the disk. |

| Column Name | Unit | Name | Description |
|---|---|---|---|
| DURATION | S | Duration | Duration of the sample (in seconds). |
| GOLEVELS | N/A | Grouping Object Levels | Levels for populating a grouping object, colon separated. |
| SYSNM | N/A | System name | The name of the system proposed for identification in BMC Capacity Optimization; if absent, the DS_SYSNM is used. |
| SYSTYPENM | N/A | Object type | Object type name. |
| TS | N/A | Timestamp | Start timestamp of the sample [YYYY-MM-DD HH:MI:SS]. |
| WEIGHT | N/A | Weight | The weight of the sample. |

For detailed information about datasets, refer to the BMC Capacity Optimization documentation.

# Performance Metrics for BCO v9.0.03

For BCO v9.0.03, the performance metrics are available in the following datasets:

- STOCONT Dataset Performance Metrics
- STOGLB Dataset Performance Metrics
- STOHOST Dataset Performance Metrics
- STOSSW Dataset Performance Metrics
- SYSDSK Dataset Performance Metrics

## [108] STOCONT Dataset Performance Metrics for BCO v9.0.03

Metrics are presented in table, where each column represents a particular variable, and each row corresponds to a given member of the STOCONT dataset.

| Metric | Unit | Name | Description | Value Type |
|---|---|---|---|---|
| BYCONT_PORT_NUM | N/A | Number of available ports by controller | Number of available ports by controller. The subobject specifies the controller name. | Configuration data (string) |
| BYCONT_PROCESSOR_UTIL | PCT | Processor utilization by controller | Processor utilization by controller. The subobject specifies the controller name. | Percentage counter |
| BYCONT_RESPONSE_TIME | MILLIS | Response time by controller | Response time by controller. The subobject specifies the controller name. | Elapsed time |
| BYCONT_TRANSFER_RATE | BYTE/S | Transfer rate by controller | Transfer rate by controller. The subobject specifies the controller name. | A frequency, in events/sec |

## Additional Columns

| Column Name | Unit | Name | Description |
|---|---|---|---|
| CONTNM | N/A | Storage controller name | Storage controller name. |
| DS_SYSNM | N/A | System name in the Datasource | The name of the system as in the Datasource (for lookup). |
| DURATION | S | Duration | Duration of the sample. |
| SYSNM | N/A | System name | The name of the system proposed for identification in BMC Capacity Optimization; if absent, the DS_SYSNM is used. |
| SYSTYPENM | N/A | Object type | Object type name. |

| Column Name | Unit | Name | Description |
|---|---|---|---|
| TS | N/A | Timestamp | Start timestamp of the sample [YYYY-MM-DD HH:MI:SS]. |

For detailed information about datasets, refer to the BMC Capacity Optimization documentation.

# [30] STOGLB Dataset Performance Metrics for BCO v9.0.03

Metrics are presented in a table, where each column represents a particular variable, and each row corresponds to a given member of the STOGLB dataset.

| Metric | Entity | Unit | Name | Description | Value Type |
|---|---|---|---|---|---|
| ST_ACCESSIBLE | Storage Area Network | BYTES | Accessible Space | Total capacity of accessible devices on this array or the arrays in the group. | Generic counter, absolute value |
| ST_ACC_USED | Storage Area Network | BYTES | Accessible Used Space | Total host file system and raw database capacity that resides exclusively on this array or on one array in this group. Does not include file system or raw database capacity that also resides on another array. | Generic counter, absolute value |
| ST_AVAILABLE_CAPACITY_PCT | Storage Pool | PCT | Available Capacity Percentage | Percentage of the storage capacity that is not consumed. | Percentage counter |
| ST_AVAILABLE_FOR_STORAGE_POOLS | Storage Area Network | BYTES | Available Capacity for Storage Pools | Raw space available for storage pool creation. | Negative accumulation counter |
| ST_AVAILABLE_IN_STORAGE_POOLS | Storage Area Network | BYTES | Available Capacity in Storage Pools | Sum of space not consumed in all storage pools. | Negative accumulation counter |
| ST_CONFIG_SUM | Storage Area Network, Storage Pool | BYTES | Configured Usable Space | Capacity on the array that can be used by the array. Includes capacity configured into logical devices or groups minus capacity defined by the protection level (mirror or parity RAID) for the devices or groups. | Generic counter, absolute value |
| ST_CONFIG_SUM_RAW | Storage Area Network, Storage Pool | BYTES | Configured Raw Space | Capacity on the array that has a defined protection level (mirror or parity RAID). | Generic counter, absolute value |
| ST_FREE | Storage Area Network, Storage Pool | BYTES | Storage Free | Storage free size. | Negative accumulation counter |

| Metric | Entity | Unit | Name | Description | Value Type |
|---|---|---|---|---|---|
| ST_POOL_OVERSUBSCRIBED_TOTAL* | Storage Area Network, Storage Pool | BYTES | Pool Oversubscribed Total | The amount by which storage pool is over-subscribed. | Generic counter, absolute value |
| ST_POOL_OVERSUBSCRIPTION_SITUATION | Storage Pool | N/A | Pool Oversubscription Situation | Identify the over-subscribed pools in danger i.e. thin pools where Subscribed Capacity Percentage is greater than 100 % and the Consumed Capacity Percentage crosses the threshold. | Configuration data (string) |
| ST_POOL_SUBSCRIBED_CAPACITY_PCT | Storage Pool | PCT | Pool Subscribed Capacity Percentage | Subscribed capacity, in percentage of the capacity of the storage pool. Can exceed 100% for thin pools, therefore called oversubscribed. | Percentage counter |
| ST_POOL_TYPE | Storage Pool | N/A | Array Pool Type | Type of the pool. Possible values are Disk Group, RAID Group, Traditional Pool and Thin Pool. | Configuration data (string) |
| ST_PORT_COUNT | Storage Area Network | N/A | Storage array ports number | Number of storage array ports. | Configuration data (string) |
| ST_PRIMARY_ALLOCATED* | Storage Area Network | BYTES | Primary Allocated Usable Space | Capacity of primary logical devices on which host can perform I/O operations minus capacity defined by the protection level (mirrors or parity RAID) for the devices. | Generic counter, absolute value |
| ST_RAW | Storage Area Network | BYTES | Raw Space | Sum of the capacities of the physical disks in the array. | Generic counter, absolute value |
| ST_SID | Storage Area Network | N/A | Storage Device Unique Identifier | Unique identifier of the storage device. | Configuration data (string) |
| ST_SYSTEM_BANDWIDTH | Storage Area Network | BYTE/S | System Bandwidth | Bandwidth available in storage system. | Configuration data (string) |
| ST_SYSTEM_BANDWIDTH_UTIL | Storage Area Network | PCT | System Bandwidth Utilization | Bandwidth consumed in storage system. | Percentage counter |
| ST_SYSTEM_TRANSFER_BYTE_RATE | Storage Area Network | BYTE/S | System Transfer Byte Rate | Total data traffic (in and out, read and write). | A frequency, in events/sec |
| ST_THINPOOL_SUBSCRIBED_TOTAL* | Storage Area Network, Storage Pool | BYTES | Thin Pool Subscribed Total capacity | Thin pool subscribed total capacity. | Configuration data (string) |

| Metric | Entity | Unit | Name | Description | Value Type |
|---|---|---|---|---|---|
| ST_USED | Storage Pool | BYTES | Storage Used Space | Storage array used space. | Positive accumulation counter |
| ST_USED_PCT | Storage Area Network, Storage Pool | PCT | Storage Used Space Percentage | Storage array used space percentage. | Percentage counter |
| ST_VENDOR | Storage Area Network | BYTES | Array Vendor | Amount vendor | Configuration data (string) |
| ST_VOLUME_CONSUMED_CAPACITY_PCT | Storage - Volume | PCT | Volume Consumed Capacity Percentage | Percentage of the volume subscribed capacity that has been actually consumed by the host. Will be typically less than 100% for thin volumes. Will be exactly 100% for all traditional volumes. | Percentage counter |
| ST_VOLUME_HOST_VISIBLE_CAPACITY | Storage - Volume | BYTES | Host Volume Visible Capacity | Amount of capacity that has been subscribed and can be "seen" by the host. | Configuration data (string) |
| ST_VOLUME_MAPPED | Storage - Volume | N/A | Volume Mapped | Whether the LUN is mapped to at least one host. | Configuration data (string) |
| ST_VOLUME_RESPONSE_TIME | Storage - Volume | MILLIS | Volume Response Time | Average time taken by the controller to complete read and write requests during the polling period. | Elapsed time |
| ST_VOLUME_TIME_SINCE_LAST_ACTIVITY | Storage - Volume | N/A | Volume Time Since Last Activity | Number of days since a last read or write operation has been observed on the monitored volume. | Configuration data (string) |
| ST_VOLUME_TRANSFER_BYTE_RATE | Storage - Volume | BYTE/S | Volume Transfer Byte Rate | Data traffic (read and write) on the volume. | A frequency, in events/sec |
| ST_VOLUME_USED | Storage - Volume | BYTES | Storage Volume Used Size | Storage volume used size. | Positive accumulation counter |

**These metrics will be missing if volumes monitoring is disabled.*

# Additional Columns

| Column Name | Unit | Name | Description |
|---|---|---|---|
| DS_SYSNM | N/A | System name in the Datasource | The name of the system as in the Datasource (for lookup) |
| DURATION | S | Duration | Duration of the sample (in seconds) |

| Column Name | Unit | Name | Description |
|---|---|---|---|
| SYSNM | N/A | Storage name | The name of the storage system |
| SYSTYPENM | N/A | Object type | Object type name |
| TS | N/A | Timestamp | Start timestamp of the sample [YYYY-MM-DD HH:MI:SS] |

For detailed information about datasets, refer to the BMC Capacity Optimization documentation.

# STOHOST Dataset Performance Metrics for BCO v9.0.03

Metrics are presented in table, where each column represents a particular variable, and each row corresponds to a given member of the STOHOST dataset.

| Metric | Unit | Name | Description | Value Type |
|---|---|---|---|---|
| BYHOST_ALLOCATED* | BYTES | Allocated Space by Host | Allocated Space by Host in Bytes | Positive accumulation counter |
| BYHOST_SIZE* | BYTES | By Host Physical Size | Physical capacity by host | Positive accumulation counter |

**These metrics will be missing if volumes monitoring is disabled.*

# Additional Columns

| Column Name | Unit | Name | Description |
|---|---|---|---|
| DS_SYSNM | N/A | System name in the Datasource | The name of the system as in the Datasource (for lookup) |
| DURATION | S | Duration | Duration of the sample (in seconds) |
| GOLEVELS | N/A | Grouping Object Levels | Levels for populating a grouping object, colon separated |
| SUBOBJNM | N/A | Host name | The name of the host |
| SYSNM | N/A | Storage name | The name of the storage system |
| SYSTYPENM | N/A | Object type | Object type name |
| TS | N/A | Timestamp | Start timestamp of the sample [YYYY-MM-DD HH:MI:SS] |

For detailed information about datasets, refer to the BMC Capacity Optimization documentation.

# [55] STOSSW Dataset Performance Metrics for BCO 9.0.03

Metrics are presented in a table, where each column represents a particular variable, and each row corresponds to a given member of the STOSSW dataset.

| Metrics | Unit | Name | Description | Val Type |
|---|---|---|---|---|
| BYPORT_ADDRESS | N/A | Storage switch port address | Storage switch port address. | Configuration data (string) |
| BYPORT_BANDWIDTH | BIT/S | Bandwidth of the storage switch port | Bandwidth of the storage switch port. | Configuration data (string) |
| BYPORT_BANDWIDTH_UTIL | PERCENTAGE | Bandwidth utilization of the storage switch port | Bandwidth utilization of the storage switch port. | Percentage counter |
| BYPORT_BYTE_RATE | BYTE/S | Input/output traffic rate for the port | Input/output traffic rate for the port. | A frequency, in events/sec |
| BYPORT_CONTROLLER_NAME | N/A | Storage switch port controller name | Storage switch port controller name. | Configuration data (string) |
| BYPORT_TYPE | N/A | Storage switch port type | Storage switch port type. | Configuration data (string) |

## Additional Columns

| Column Name | Unit | Name | Description |
|---|---|---|---|
| DS_SYSNM | N/A | System name in the Datasource | The name of the system as in the Datasource (for lookup). |
| DURATION | S | Duration | Duration of the sample (in seconds). |
| GOLEVELS | N/A | Grouping Object Levels | Levels for populating a grouping object, colon separated. |
| LOCATIONNM | N/A | Location Name | Physical location of the measured object; if absent, assumed UNKNOWN. |
| PORTNM | N/A | Storage switch port name | Storage switch port name. |
| SYSNM | N/A | System name | The name of the system proposed for identification in BMC Capacity Optimization; if absent, the DS_SYSNM is used. |
| SYSTYPENM | N/A | Object type | Object type name. |
| TS | N/A | Timestamp | Start timestamp of the sample [YYYY-MM-DD HH:MI:SS]. |

For detailed information about datasets, refer to the BMC Capacity Optimization documentation.

# [4] SYSDSK Dataset Performance Metrics for BCO 9.0.03

Metrics are presented in a table, where each column represents a particular variable, and each row corresponds to a given member of the SYSDSK dataset.

## Metrics

| Metrics | Unit | Name | Description | Val Type |
|---|---|---|---|---|
| BYDISK_MODEL | N/A | Model by Disk | Model of the Disk. | Configuration data (string) |
| BYDISK_READ_RATE | BYTE/S | Disk Read Rate by Disk | The average bytes per second read from this disk device during the interval. The sub-object specifies the disk id. | A frequency, in events/sec |
| BYDISK_RESPONSE_TIME | MILLIS | Disk Response Time | The average time (in milliseconds) for I/O requests issued to the device to be served. This includes the time spent by the requests in queue and the time spent servicing them. | Generic counter, absolute value, weighted |
| BYDISK_RPM | RPM | Disk Revolutions per Minute | Disk revolutions per minute. | Configuration data (string) |
| BYDISK_SIZE | BYTES | Size by Disk | Disk size (bytes). | Configuration data (string) |
| BYDISK_TRANSFER_RATE | BYTE/S | Disk Transfer Rate by Disk | The average bytes per second transferred to or from this disk device during the interval. The sub-object specifies the Disk id. | A frequency, in events/sec |
| BYDISK_UTIL | PCT | Disk Utilization % by Disk | The percentage of the time that this disk device was busy transferring data during the interval. The sub-object specifies the disk name. | PERCENTAGE |
| BYDISK_WRITE_RATE | BYTE/S | Disk Write Rate by Disk | The average bytes per second written to this disk device during the interval. The sub-object specifies the disk id. | RATE |
| BYDISK_TYPE | N/A | The Disk Type | The type of the disk such as physical or virtual. | Configuration data (string) |

## Additional Columns

| Column Name | Unit | Name | Description |
|---|---|---|---|
| DS_SYSNM | N/A | System name in the Datasource | The name of the system as in the Datasource (for lookup). |
| DSKNM | N/A | Disk Name | The name of the disk. |
| DURATION | S | Duration | Duration of the sample (in seconds). |
| GOLEVELS | N/A | Grouping Object Levels | Levels for populating a grouping object, colon separated. |

| Column Name | Unit | Name | Description |
|---|---|---|---|
| SYSNM | N/A | System name | The name of the system proposed for identification in BMC Capacity Optimization; if absent, the DS_SYSNM is used. |
| SYSTYPENM | N/A | Object type | Object type name. |
| TS | N/A | Timestamp | Start timestamp of the sample [YYYY-MM-DD HH:MI:SS]. |
| WEIGHT | N/A | Weight | The weight of the sample. |

For detailed information about datasets, refer to the BMC Capacity Optimization documentation.

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